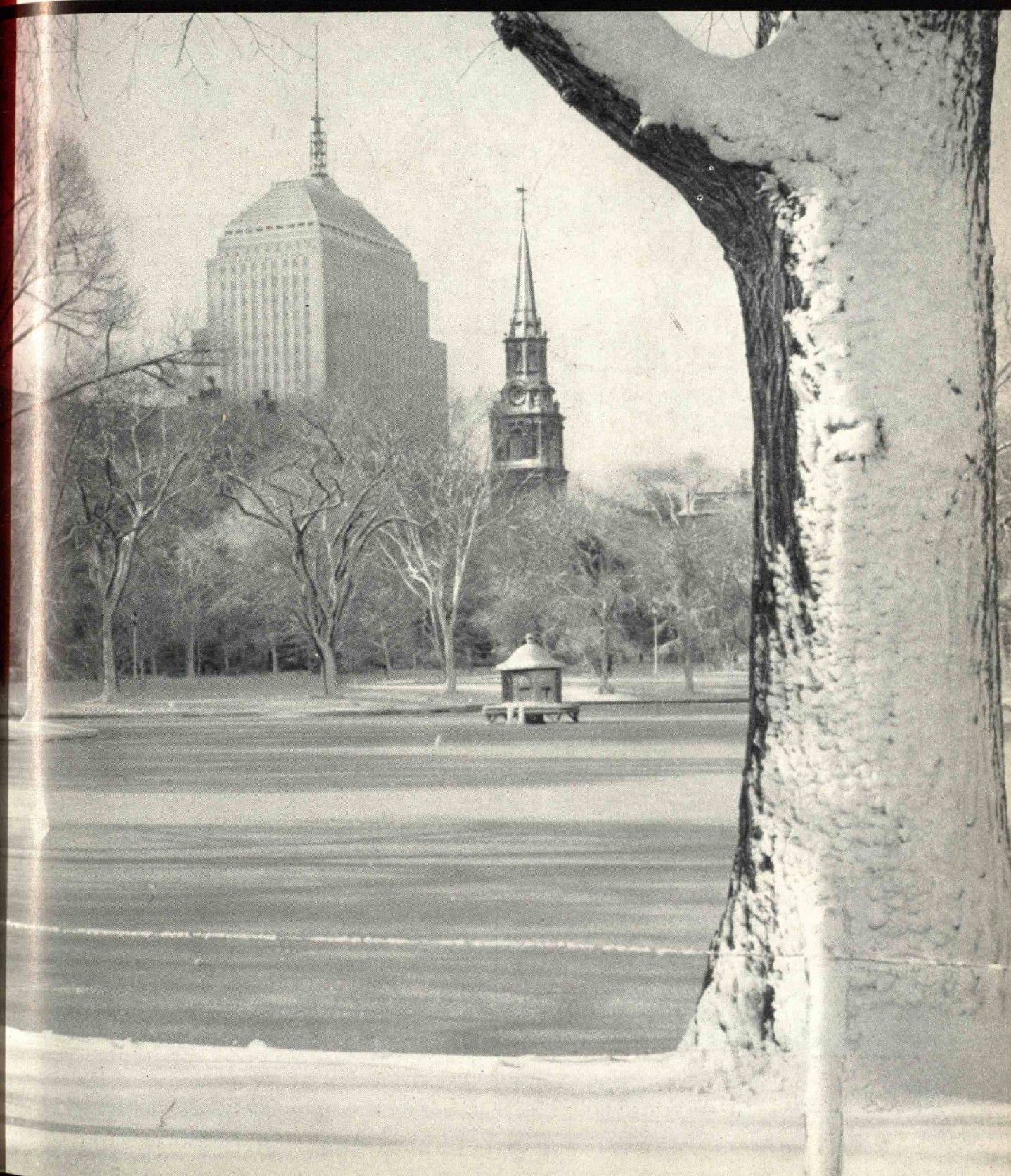


# TECHNOLOGY

## REVIEW

*January 1957*



# technology review

Published by MIT

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Wire sculpture by Henry Szafarz

## The Inside Story

Beneath the surface, there's a lot going on.

An underground river of power surges through innumerable cables, supplying the electrical energy that keeps the entire community rolling smoothly.

Throughout the nation, Simplex products are used extensively in such applications.

This is particularly true of ANHYDREX XX, the ideal all-purpose cable for high-voltage use. This expertly engineered cable is popularly employed in the 2001 to 35,000 volt range, and has a Conductor Temperature Rating of 90°C up to 5 KV (a rating never attained before the development of ANHYDREX XX).

For more technical data, write for Booklet 1023.

**SIMPLEX WIRE & CABLE CO.**, 79 Sidney Street, Cambridge 39, Mass.

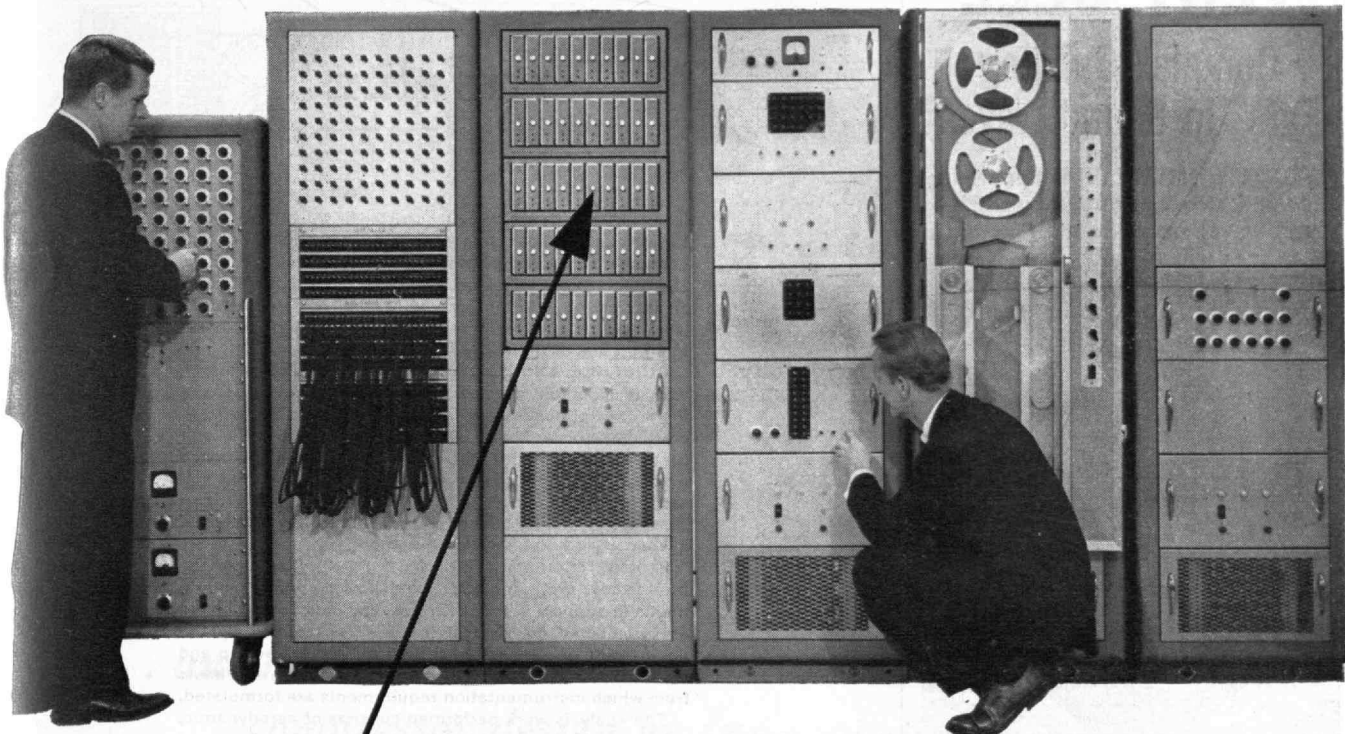


Simplex Anhydrex XX Underground Cable

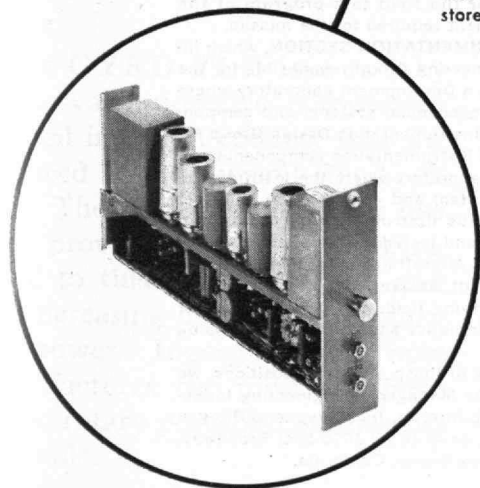
Simplex



# Doelcam Preamplifiers combine isolated input with accuracy of 1 part in 2,000 in the CEC MilliSADIC



Consolidated Electrodynamic Corporation's MilliSADIC Installation for General Electric's Aircraft Nuclear Propulsion Dept., Cincinnati samples 400 jet engine temperatures per second and stores this information in digital form.



Doelcam Data Handling D-C Amplifier, Model 2HDH-2. This type is used as preamplifiers in the CEC MilliSADIC shown above.

The *isolated input* of the Doelcam Data Handling D-C Amplifiers, Model 2HDH-2 makes them ideally suited as preamplifiers to raise the input signals from thermocouples and strain gauges to the level required by the analog-to-digital conversion system of CEC's MilliSADIC installation at General Electric's Aircraft Nuclear Propulsion Dept., Cincinnati. The low noise level, high degree of linearity and zero and gain stability of these amplifiers provide the accuracy of 1 part in 2,000 required for this application. The exclusive Doelcam Second Harmonic Converter as the input element of these amplifiers provides the bonus features of ultra high common mode rejection and resistance to pick-up.

Doelcam Data Handling D-C Amplifiers, 2HDH Series, are compact plug-in, rack-mounted units specifically designed for use as preamplifiers in data processing systems. These amplifiers are available in the input range, rise time, frequency response or gain specifications required by many data processing systems. Other amplifiers in this series can accept as many as 150 separate D-C signals per second. Write for Bulletin 2HDH . . . Doelcam, Dept. 1, a Division of Minneapolis-Honeywell, 1400 Soldiers Field Road, Boston 35, Mass.

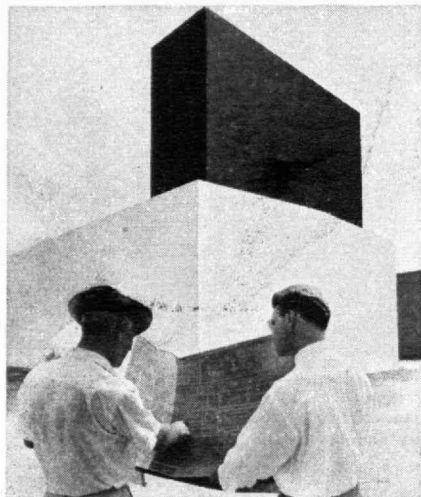
**Honeywell**   
DOELCAM DIVISION



# NORTHROP ENGINE TEST CELL

## Complex Building Eats Up Sound Waves

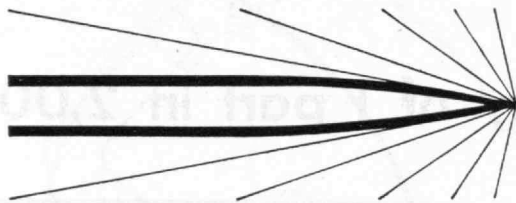
(HAWTHORNE, CALIF.) In this apparently uncomplicated structure, shown below, sound waves from the most powerful jet engines will literally destroy themselves. It is Northrop Aircraft's uniquely designed engine test cell,



which is actually two buildings — one within the other — and the inner one is divided into four separate sections. Each unit is completely insulated from the others to add to the destruction of all sound. An entire fuselage of Northrop's Snark SM-62 missile can be placed in the forward section of the cell, yet little if any sound from its powerful engine can be heard outside.

Sound from the engine under test passes into a maze of concrete chambers which produce resonances destructive to the sound itself. Northrop missile engineers will be completely isolated from any sound during the tests, which can be observed through a closed television circuit. Two sets of 18-ton doors, that hermetically seal the building during tests, can be closed in 30 seconds by small air motors. The cell also has a three-fold fire prevention system to eliminate all fire danger.

The new building is one of many advanced features incorporated in Northrop's multi-million-dollar engineering and science center. When completed, this center will offer engineers the opportunity to work with the latest equipment and installations in the most advanced facility of its kind.



## MISSILE ENGINEERS

Many new positions are being created at Northrop Aircraft for missile engineers in a wide range of activity: control, guidance, servo, computers, recording, optical, reliability, electro-mechanical, telemetering and electronics. There's an interesting position for you, at your own experience level, with attractive remuneration and steady advancement, in one of the following groups:

**GUIDANCE AND CONTROLS**, encompassing research and development of advance automatic guidance and flight control systems for both missiles and piloted aircraft. Specific areas of development include: radio and radar systems, flight control systems, inertial guidance systems, instrument servo systems, digital computer and magnetic tape recording systems, airborne analogue computer systems, optical and mechanical systems, and systems test and analyzer equipment.

**FLIGHT TEST ENGINEERING SECTION**, which plans the missile test programs and establishes test data requirements in support of the programs. The data requirements are predicated on the test information required by the engineering analytical and design groups to develop and demonstrate the final missile design, and are the basis from which instrumentation requirements are formulated.

The analysis work performed consists of aerodynamic, missile systems, dynamics, flight control, propulsion and guidance evaluation. The Flight Test Engineering Section is also responsible for the field test program of the ground support equipment required for the missile.

**FLIGHT TEST INSTRUMENTATION SECTION**, which includes a Systems Engineering Group responsible for the system design concept; a Development Laboratory where electronic and electro-mechanical systems and components are developed; an Instrumentation Design Group for the detail design of test instrumentation components and systems; a Mechanic Laboratory where the instrumentation hardware is fabricated; and a Calibration and Test Group where the various instrumentation items and systems are calibrated and tested.

For 17 years Northrop Aircraft has pioneered in missile research and development. As a member of this forefront organization in this growing field, new opportunities for full expression of your initiative and ability will always be yours at Northrop.

If you qualify for any of these attractive positions, we invite you to contact the Manager of Engineering Industrial Relations, Northrop Aircraft, Inc., telephone OREGON 8-9111, Extension 1893, or write to: 1015 East Broadway, Department 4600-BB, Hawthorne, California.



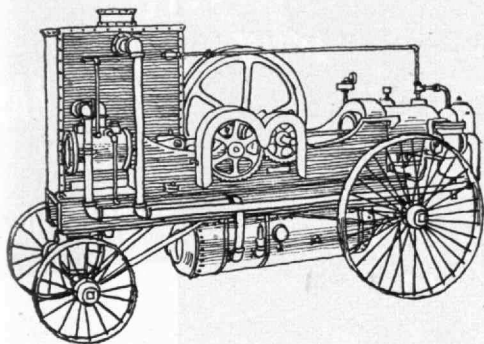
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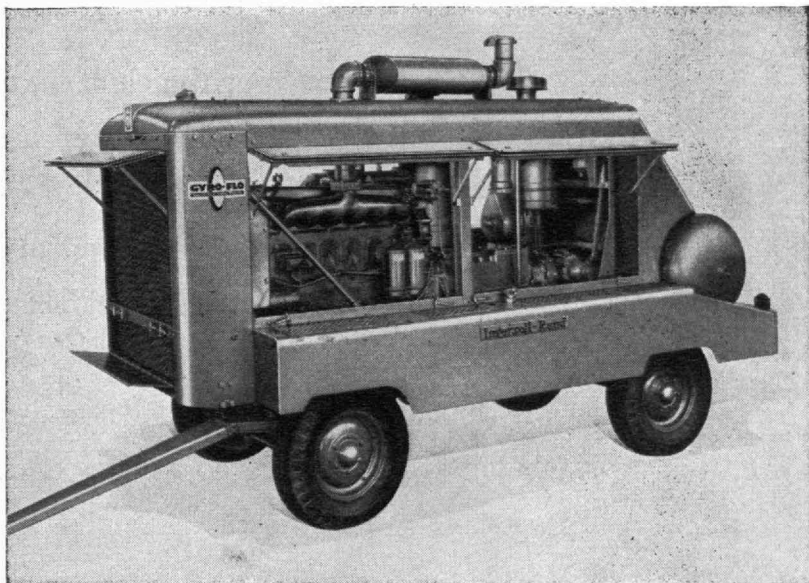
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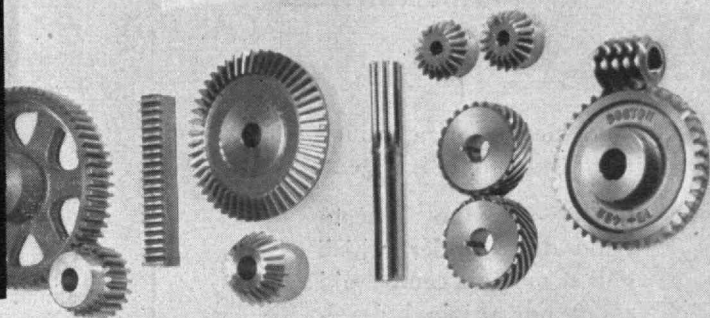
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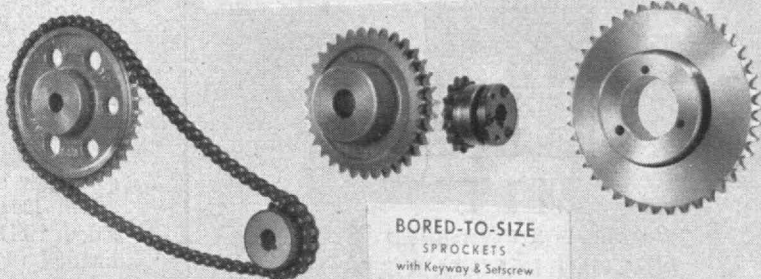
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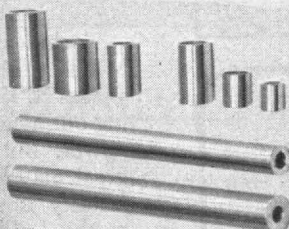


### SPROCKETS AND CHAIN

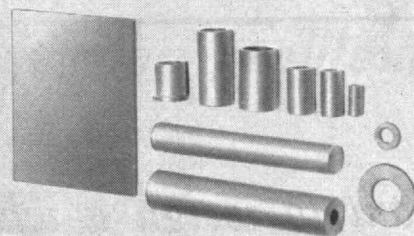


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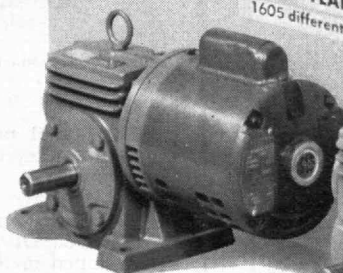
### Oil-impregnated BOST-BRONZ BEARINGS



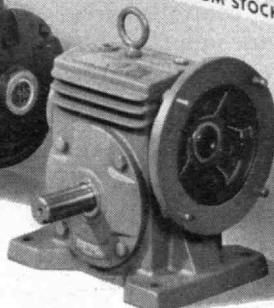
### • FLANGED CARTRIDGES • PILLOW BLOCKS • COUPLINGS • UNIVERSAL JOINTS • BALL BEARINGS



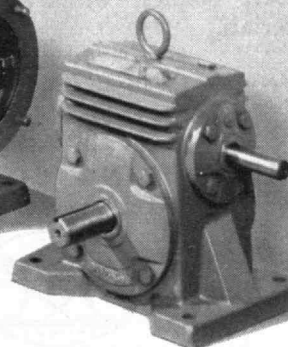
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George Burr '41 VIII



## THE TABULAR VIEW

**Uncommon Man.**— So much of Twentieth Century thinking extols the virtues of the masses that we tend to become oblivious to the consequences of leveling processes that inevitably ensue by catering to the common man. For this reason, "Education of the Uncommon Man" (page 149) by EDWIN S. BURDELL, '20, comes as a breath of much needed fresh air. Dr. Burdell holds that society should be as much concerned with the advancement of the uncommon man of brains and integrity, as it has been with enlightenment of the masses. Dr. Burdell's message in *The Review* is abstracted from his annual report as President of the Cooper Union for the Advancement of Science and Art.

President Burdell studied at M.I.T. and Harvard as a member of the Classes of 1920 and 1921, respectively. In addition, he received the A.M. and Ph.D. degrees from Ohio State University in 1929 and 1934, respectively. He was a faculty member at Ohio State University from 1928 to 1934; member of the Ohio Commission on Unemployment Insurance, 1932; state administrator for Emergency Education in Ohio, 1933-1934; professor of sociology and director of summer school, M.I.T., 1934-1938; Dean of Humanities, 1937-1938 at M.I.T.; and, since 1951, has been president of Cooper Union. He headed a Committee on General Education of the American Society for Engineering Education, and his chief interests include city planning and social interpretation of the impact of technology on modern society.

**Technical Man Power.**— In an address before the M.I.T. Club of New York on November 14, PRESIDENT JAMES R. KILLIAN JR., '26, spoke on the need for increasing our available supply of scientific and engineering man power. But Dr. Killian also recognized that, however great may be the need for technical man power, our top priority is to develop the nation's intellectual potential to the fullest. "Scientific and Engineering Man Power" (page 152) is a report and condensation of this outstanding address. President Killian has to his credit a distinguished list of achievements as educator, administrator, author, and public servant.

(Concluded on page 134)



Canada Dry Ginger Ale, Inc., Rochester plant

### Automation

To adopt modern production methods may require alterations or extensions to your present facilities.

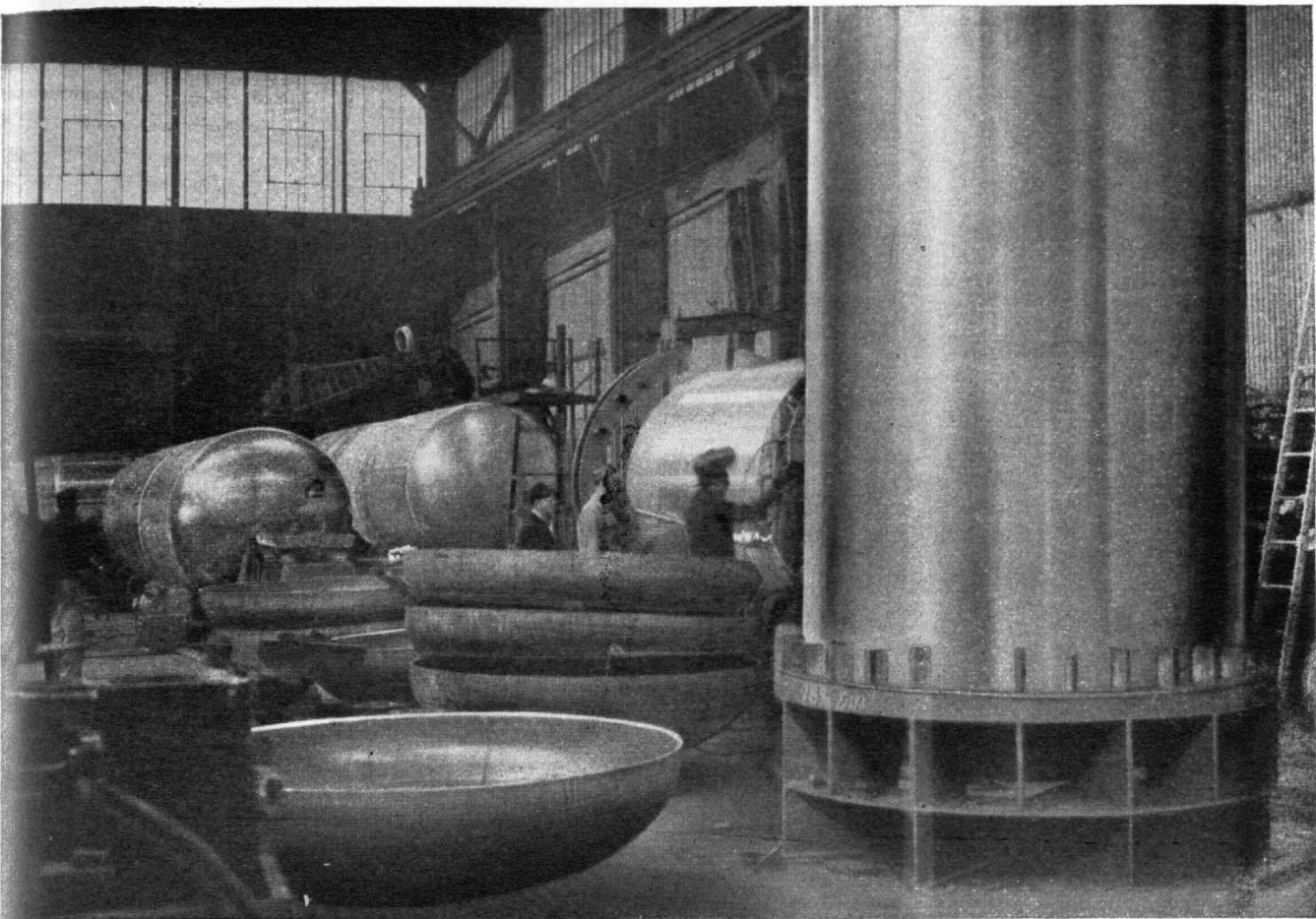
We have modernized many plants in the past 39 years for such companies as Chas. Pfizer, Canada Dry, Air Reduction, etc., and have developed methods for doing such work at reasonable cost and with a minimum of interruption to plant operations.

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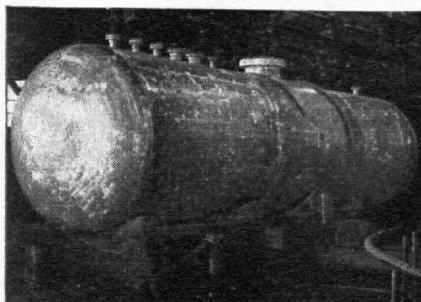
Founded 1917

**INDUSTRIAL CONSTRUCTION**  
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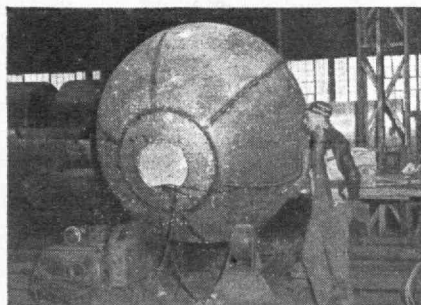
Alfred T. Glassett, '20, President



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Aluminum tank for rocket fuel

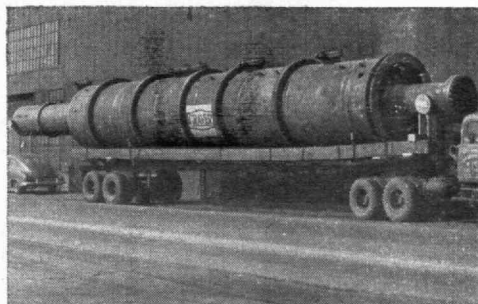


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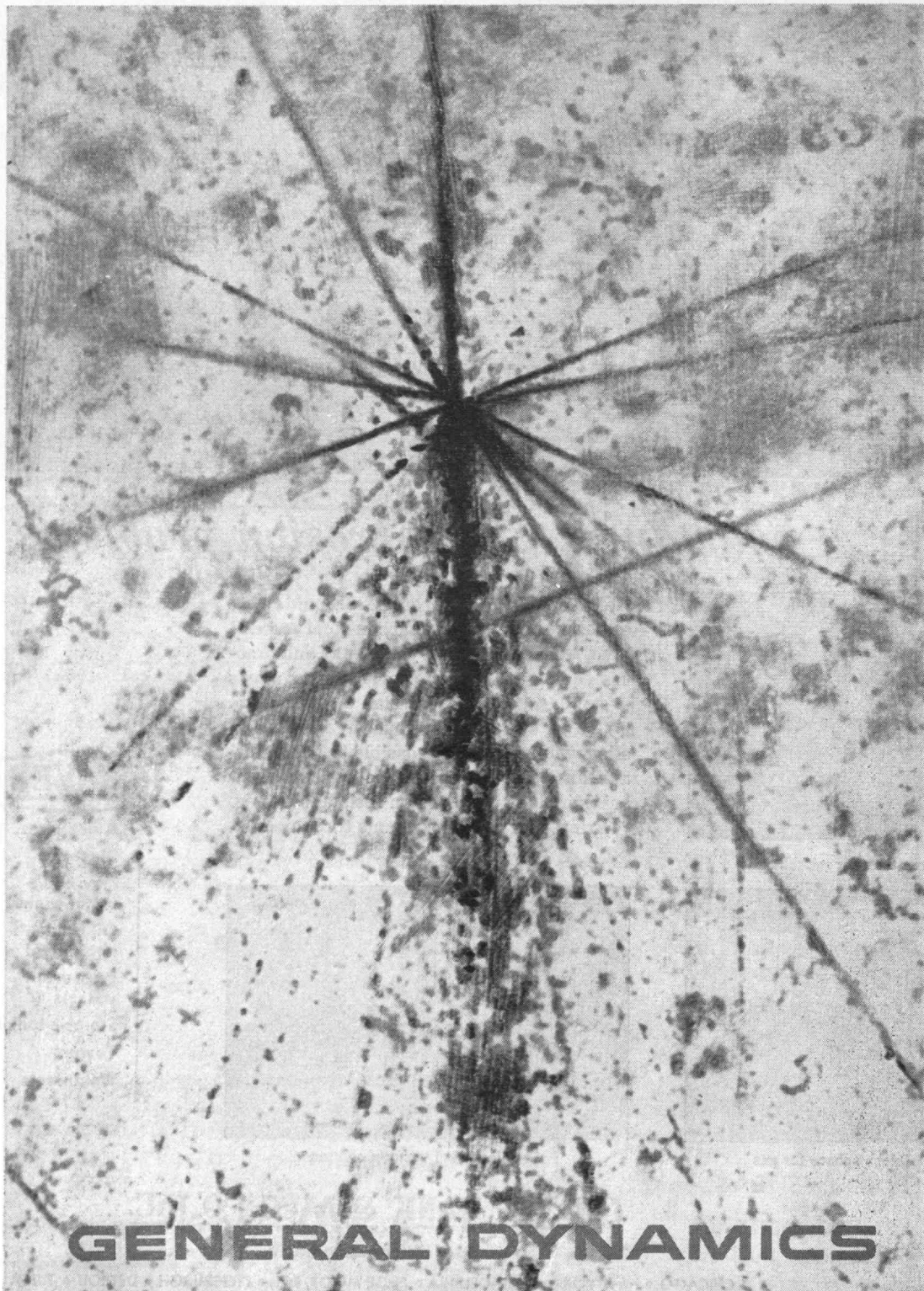
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Exploring the Universe: Sub-Atomic Worlds. . . To Greeks, the atom was literally "a-tomos," not to be cut. Now its very nucleus is split and scientists are tracking *sub-atomic* particles, seeking to discover the nature—order and meaning—of a vast, dynamic universe in which domestic notions of space and time and energy do not apply. *Ethical corollary:* The "finds" of nuclear exploration must be employed *not* in the service of a scientific, or economic, or political provincialism but *wherever* they are needful to the physical, mental and moral rehabilitation of men and of societies.

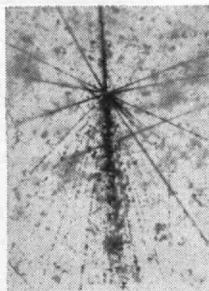


DIVISIONS



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**"Within the next century, all the world will be poor in energy  
...except for atomic energy."**

Can we say then—since there is a positive correlation between energy consumption and national income, and between national income and individual living standards—that many of today's children may see, and suffer from a world-wide poverty?

The industrial West—metallurgy, combustion engines, chemistry, steam, electricity, electronics—was built and is maintained by power derived from fossil fuels. It is a "coal and oil" civilization and it, alone, in the next century could consume all the free world's coal and oil resources.

Now, however, the once-agrarian East and Latin America—two-thirds of the world's population—also are determined to have the benefits of industrialization: power to conquer poverty and disease; power to create and maintain an economic self-sufficiency; and, out of that, power to create and maintain political freedom.

The practical developments of the Industrial Revolution that have so profoundly changed the world economy since 1856—the Bessemer converter, aniline dyes, oil-cracking, the internal combustion engine, the electric motor, electric light, electric power, synthetics, electric and electronic communication, automation and computation, the submarine, winged and wingless aircraft and the space rocket—were the direct result of preceding theoretical explorations by Galileo, Bacon, Newton, Gauss, Laplace, Faraday and those others who could visualize new worlds.

The Atomic Revolution now overthrowing present conceptions of power, transport, communication, medicine, agriculture and biology—and hence colonial and collectivist politics—stems directly from the pure and applied scientific research of Curie, Rutherford, Planck, Einstein, Bohr, Fermi, and hundreds of others.

It is evident, then, that *exploration of the universe* is now requisite to our survival as men and nations.

Thus, prospecting for new energy sources—whether in sub-atomic worlds, in the atom, in the earth, in the sea, in the sun, or in the dynamics of stars—is an enterprise for new *scientist-manager-engineer-share owner* groups. Corporate "systems" with the research and development capabilities, the production facilities, the financial capacity and the courage to fit out scientific expeditions to new and far places—and to capitalize on their discoveries.

General Dynamics today is the product not only of its own particular history but of the scientific and industrial history of the Western world. As such, Dynamics declares its corporate purpose to be:

*The comprehensive exploration and translation of the basic forces of nature into useful work under the sea, on the sea, on land, in the air, and in space beyond the earth's atmosphere.*







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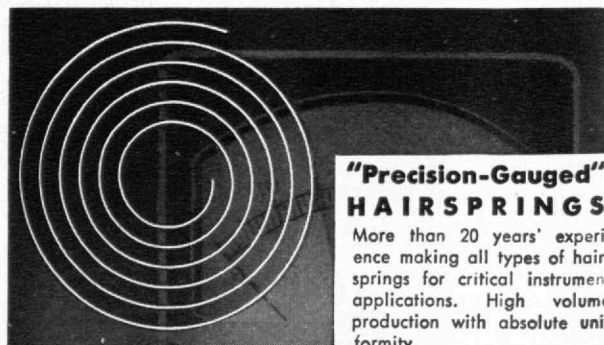
**Earnest Encomium.** — CRAWFORD H. GREENEWALT, '22, President of the E. I. du Pont de Nemours and Company, and long-time friend of Alfred P. Sloan, Jr., '95, was charged with making the presentation to Mr. Sloan, of the Silver Stein Award of the M.I.T. Club of New York on November 14. In his tribute to Mr. Sloan (page 154) as a public-spirited citizen, Mr. Greenewalt clearly recognizes that as government "must tailor its program to the general level, to the common denominator" and that "as opportunities for private generosity are gradually worn away, we face . . . the possibility that our moral and spiritual standards will be subjected to a similar erosion."

Mr. Greenewalt has been associated with the Du Pont firm since his graduation from M.I.T. in 1922. His rise has been steady, and he became Du Pont's 10th president in January, 1948. He made notable contributions to the successful construction and operation of the Hanford plant of the Atomic Energy Commission during World War II. He has been awarded half a dozen honorary degrees, is a life member of the M.I.T. Corporation, and is affiliated with many scientific societies.

**Rational Response.** — In responding to the award of the Silver Stein presented to him on November 14 by the M.I.T. Club of New York, ALFRED P. SLOAN, JR., '95, observed (page 155), "What better investment can we, as a people, make than in education?" M.I.T. awarded Mr. Sloan an S.B. degree, and Princeton University conferred upon him the LL.D. degree.

Mr. Sloan was president and general manager of Hyatt Roller Bearing Company for 15 years, president of United Motors Corporation for three years, president of General Motors Corporation 14 years and, from 1937 until recently, chairman of its board of directors. At present, Mr. Sloan is honorary chairman of General Motors Corporation. He is also director of E. I. du Pont de Nemours and Company.

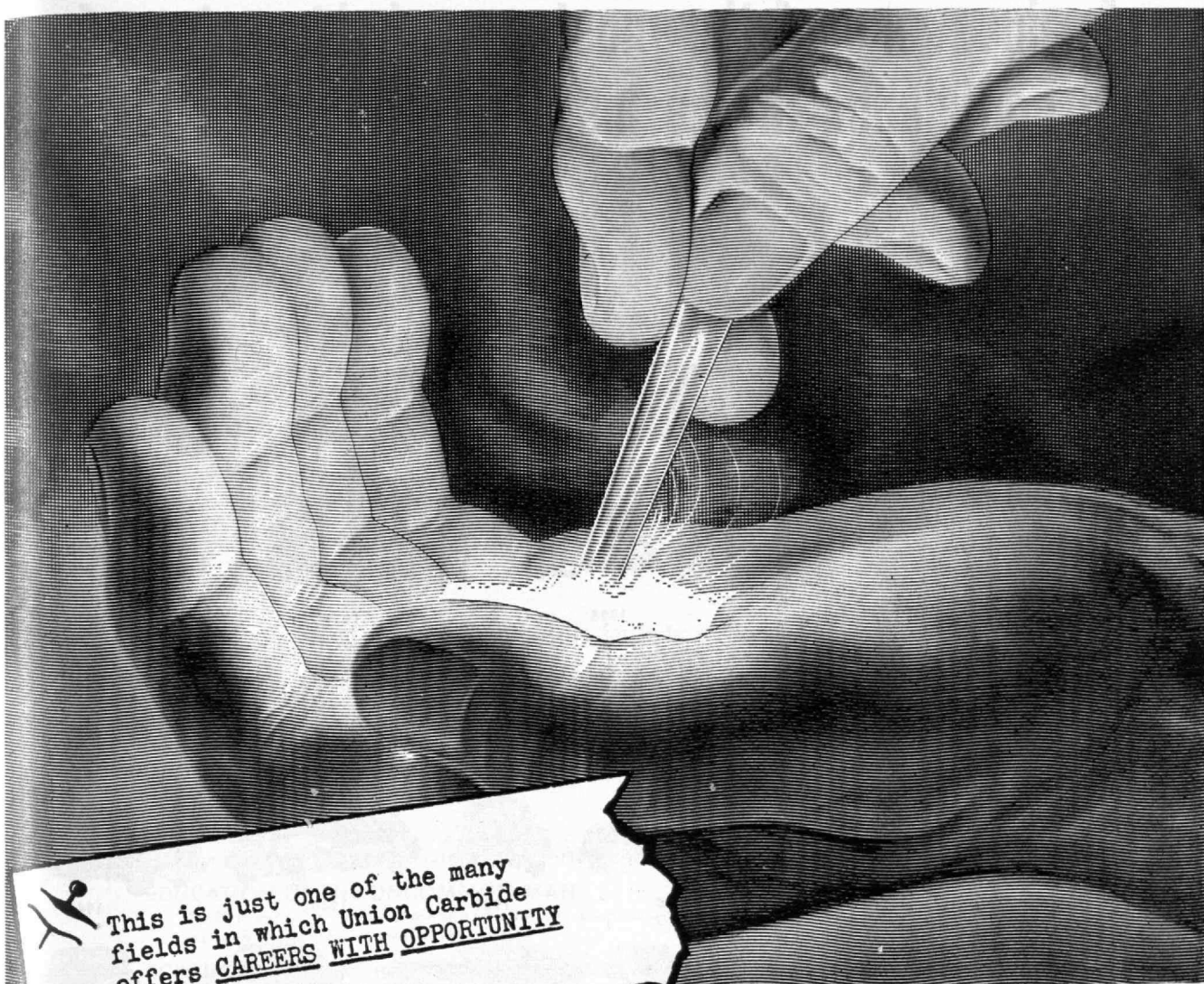
**Graft Inquiry.** — FREDERIC W. NORDSIEK, '31, frequent contributor and valued editorial associate of The Review since 1944, finds himself involved in an inquiry of graft this month (page 156), but the graft is of the horticultural or medical variety and bears not on ethics. Since his graduation from the Institute's Course in Biology and Public Health in 1931, Mr. Nordsiek has had a varied and interesting professional career in the food industry or in public health. For the past several years he has been engaged in administering research grants for the American Cancer Society.




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durable upholstery, washable playing cards, unbreakable phonograph records. The list of useful products grows bigger all the time.

**With an eye to the future,** the people of Union Carbide are still pioneering in this fascinating field. The years to come will see more and better plastics serving in every American home.

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**GOOD YEAR**





Amund Enger, '27  
Summer in Norway

# Technology Review

TITLE REGISTERED, U. S. PATENT OFFICE

Edited at the Massachusetts Institute of Technology

VOL. 59, NO. 3

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Published monthly from November to July inclusive on the twenty-seventh of the month preceding the date of issue, at 60 cents a copy. Annual subscription, \$4.00; Canadian and foreign subscription, \$4.50. Published for the Alumni Association of the M.I.T.: Theodore T. Miller, President; H. E. Lobdell, Executive Vice-president; Saxton W. Fletcher, John J. Wilson, Vice-presidents; Donald P. Severance, Secretary-Treasurer.

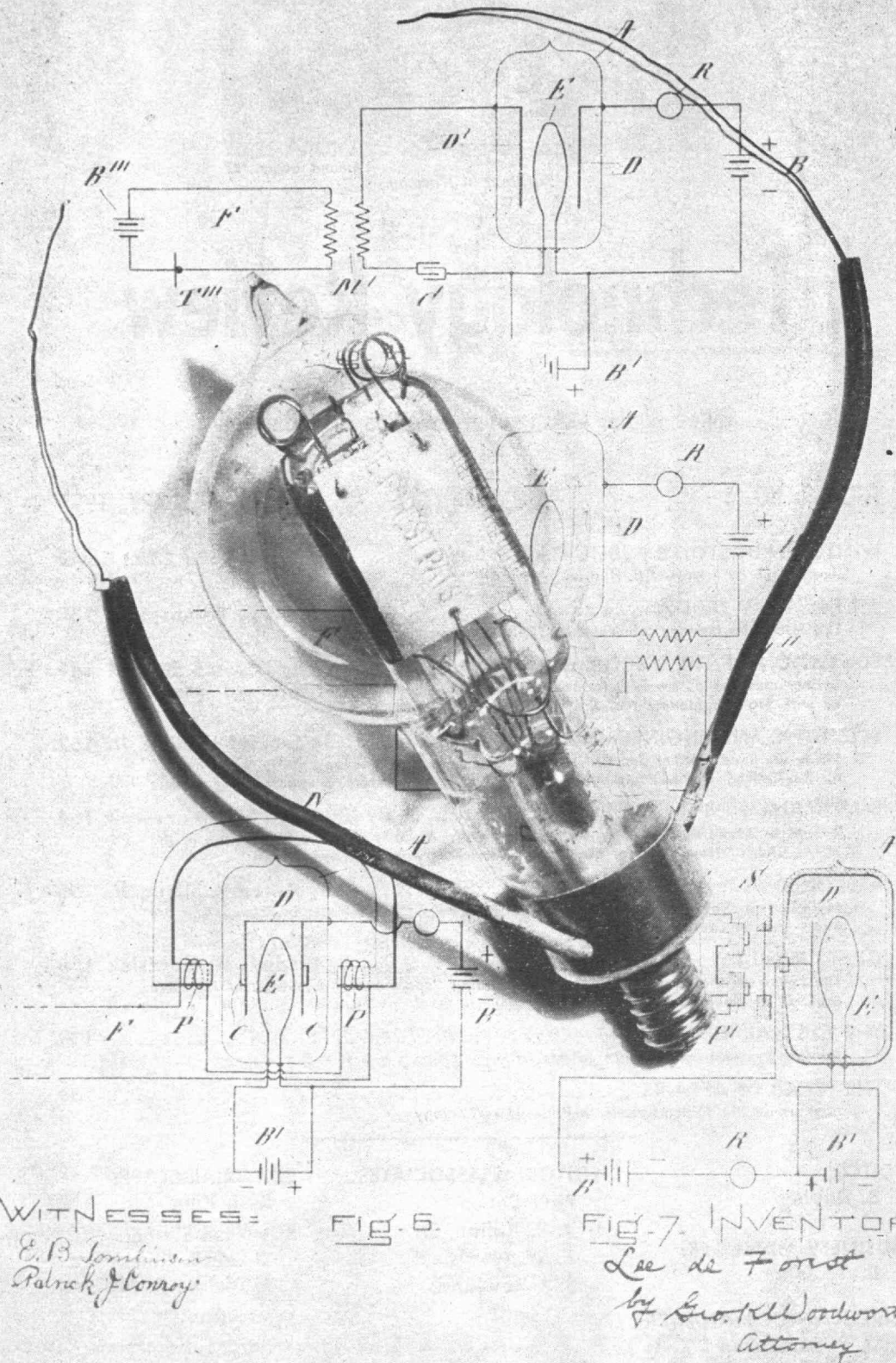
Published at Hildreth Press, Inc., Bristol, Conn. Editorial Office, Room 1-281, Massachusetts Institute of Technology, Cambridge 39, Mass. Entered as second-class mail matter at the Post Office at Bristol, Conn. Copyrighted, 1957, by the Alumni Association of the Massachusetts Institute of Technology. Three weeks must be allowed to effect change of address, for which both old and new addresses should be given.

L. DE FOREST.

## DEVICE FOR AMPLIFYING FEEBLE ELECTRICAL CURRENTS.

APPLICATION FILED OCT. 25, 1906.

2 SHEETS—SHEET 2.



## An Industry Is Born

With a half century of significant developments to its credit, the electronics industry can trace its origin to the invention of the Audion by Lee DeForest in the latter half of 1906, and particularly to the patent, issued January 15, 1907, for a "device for amplifying feeble electrical currents."

# The Technology Review

VOL. 59, No. 3

JANUARY, 1957

## The Trend of Affairs

### Half a Century of Electronics

■ This month marks the 50th anniversary of the issuance of the famous patent No. 841,387 on the first electronic "device for amplifying feeble electrical currents." Its inventor, Lee DeForest, called the new device the "audion," since, he said, one could hear the ions within the tube. With the mushrooming of radio broadcasting, in the early 1920's, we have become so accustomed to the use of electron tubes in our homes, and to the versatility of electronic controls in industry and in national defense, that it is difficult to recapture the limitations of the "pre-electronic" era and to recognize the technological importance of adding two simple electrodes to Edison's incandescent lamp, then a quarter century old.

Prior to the invention of the three-element amplifying electron tube by DeForest, long-distance telephone communication was limited to ranges of perhaps 100 miles or so; for the mechanical repeaters antedating the electron tube were not very satisfactory. Radio telephony had been demonstrated prior to the invention of the audion, but only with relatively cumbersome arcs or rotating machinery that lacked flexibility and effective modulation control. The principles of television had been worked out, on paper, but only the most crude and unsatisfactory form of visual communication could be evolved without the use of electron tubes. Control and measuring devices of previously unheard of flexibility, versatility, and sensitivity became possible with the invention of the electron tube.

In 1883, Edison had discovered that an electric current would flow between an incandescent filament and a plate sealed within his lamp, if the plate were maintained at positive potential with respect to the heated wire. Such a device served as a unidirectional current control, or rectifier, and was so used by Sir John Ambrose Fleming in radio reception, about 1904. By interposing a gridlike conductor between filament and plate, DeForest found his audion would act as an amplifier, as well as a rectifier. Half a century ago, limitations of vacuum-pumping technique made it difficult to produce audions that were entirely free

from gas and, for several years, arguments raged as to the part gas played in such a tube.

DeForest's invention was a simple thing, yet it had profound effects on the electrical engineering industry. Our present multi-billion dollar electronic industry is built on electron flow control, first put to practical use in DeForest's audion. The basic three-electrode tube of DeForest has now grown into a colony of many different kinds of electronic control devices, including new types — transistors — that have joined in the service to mankind in the past decade.

By 1915, less than 10 years after the first three-electrode tube had been made, telephone service had been extended across the United States, and radio telephone signals from Washington, D. C. were heard simultaneously in Paris and Honolulu.

The electron tube made possible radio broadcasting in the early 1920's, electronic hearing aids in the 1930's, black and white television in the 1940's, color television in the 1950's, and radar techniques developed during World War II.

In September, 1956, service was opened on the first transatlantic telephone cable, using hundreds of electron tube repeaters or amplifying devices laid on the floor of the ocean where they are expected to function perfectly, even though unattended, for some 20 years.

Three distinct properties were responsible for the importance of the three-element electron tube. First and most important of all, the tube could be made to amplify signals applied to its grid, the magnified output being taken from a separate plate circuit. The grid could be maintained at a negative potential while still effecting control and, when so operated, took no power from the control circuit operating the tube. Finally, because the grid was able to control the flow of the smallest carriers of electricity — electrons — it was able to operate faster and upon much more complex wave forms than had previously been possible. In the light of present-day technology, these achievements are taken for granted, but 50 years ago their satisfactory accomplishment was little short of miraculous.



## Family Tradition

■ Of the entering classes this fall, of exactly 6,000 students, the Freshman Class of 936 includes 28 young men whose fathers preceded them in becoming Technology Alumni. Six freshmen have fathers who are members of the Class of 1929, four claim indirect affiliation with the Class of 1931, and three freshmen are sons of members of the Class of 1923. The Classes of 1928 and 1932 swell this year's freshman enrollment with two members each. Oldest and youngest classes to be represented in "following father's footsteps" are those of 1918 and 1940, respectively.

Freshmen who entered Technology last September, along with their father's name and class affiliation, are:

<i>Student</i>	<i>Parent</i>
Griffin Y. Anderson	George Y. Anderson, Jr., '24
George F. Badger	George F. Badger, '29
Norman A. Ball	Norman H. Ball, '29
William J. Bissen	Reginald A. Bissen, '30
Jonathan W. Bulkley	Reginald W. Bulkley, '27 (Deceased)
Richard F. Cahaly	Fozi M. Cahaly, '33
Donald F. de Reynier	Pierre F. de Reynier, '23
Bruce R. DeYoung	Russell DeYoung, '40
Richard G. Everit	Richard S. Everit, '19 (Deceased)
Willard B. Foster	Willard H. Foster, '32
Malcolm D. Fraser	Donald S. Fraser, '28
Phillip F. Frink, Jr.	Phillip F. Frink, '31
Walter Godchaux, 3d	Walter Godchaux, Jr., '35
Loren Godfrey	Edward R. Godfrey, Jr., '29
Joseph L. Johnson, Jr.	Joseph L. Johnson, '38
Frederick A. Kinch, Jr.	Frederick Kinch, '23
George L. Kirk	William J. Kirk, '28
Roger G. Mark	Jacob G. Mark, '29
Gerald R. McCulloh	Carroll D. McCulloh, '31
George J. Meyers, 3d	George J. Meyers, Jr., '29
James W. Overbeck	Wilcox P. Overbeck, '34
Richard L. Pack	Mendel N. Pack, '31 (Deceased)
James C. Pennypacker	James Pennypacker, '23
Richard V. Rossman	Edwin F. Rossman, '18
Douglas C. Sinclair	Donald B. Sinclair, '31
Jason L. Speyer	Joseph L. Speyer, '29
Norman Vadner	Lawrence S. Vadner, '22
Lawrence F. Wagner	Lawrence F. Wagner, '32

Of the 6,000 students currently enrolled at the campus on the Charles, 2,312 (or 38.5 per cent) are registered as graduate students. The remaining 3,688 undergraduates are approximately equally divided among the four classes with 936 freshman, 931 sophomores, 923 juniors, and 898 seniors (including fifth-year students in Architecture).

Statistically minded readers will be interested to know that the Department of Electrical Engineering has the largest total enrollment with 1,294 students at all levels. It has also the largest graduate enrollment with 407 students. The Department of Physics, with 693 students enrolled, of whom 180 are graduates, ranks second. The Department of Chemical Engineering has the third largest enrollment with a total student body of 656 including 234 graduate students. The Department of Mechanical Engineering, with 631 students (including 207 in the Graduate School) ranks fourth.

## Rabi Is Institute Professor

■ Isidor I. Rabi, Higgins Professor of Physics at Columbia University and one of the nation's most distinguished physical scientists, is visiting Institute professor at M.I.T. during the current fall term. The Institute professorship was established especially to permit men of highest achievement to study and teach at M.I.T. in fields of their own interest, without the restrictions of traditional departmental boundaries.

His appointment was recently announced by Chancellor Julius A. Stratton, '23, who said:

We are especially honored that Dr. Rabi's broad experience and distinguished talents may be shared with the Faculty of our School of Science. He is a scientist of very great accomplishments, and we hope that this Faculty post, leaving him free to cut across all established lines of scientific disciplines, will prove a stimulating and profitable one.

Winner of the Nobel Prize in physics in 1944, Dr. Rabi is widely known for his research in nuclear physics as well as for many activities in bringing science to serve national defense. His Nobel Prize was awarded for pioneering studies of the magnetic moment of the atomic nucleus, and he has made many other research contributions to quantum mechanics and theoretical physics.

Dr. Rabi holds degrees from Cornell and Columbia Universities, and he studied extensively in Europe before joining the staff at Columbia in 1929; he has been professor of physics there since 1937. He is chairman of the Scientific Advisory Committee to the Office of Defense Mobilization, a member of the Naval Research Advisory Committee, and U. S. representative to the United Nations Committee on the Conference for the Peaceful Uses of Atomic Energy. Among many awards have been the Sigma Xi Semicentennial Prize (1936), the Medal for Merit, the Legion of Honor (France), and the King's Medal (Great Britain).

No stranger to M.I.T., Dr. Rabi was associate director of the Radiation Laboratory here from 1940 to 1946. Beginning with his chairmanship of the committee to study early performance reports of radar equipment on the front lines, Dr. Rabi was a key man in the laboratory's administration and a member of its Steering Committee.

## Briton Speaks on Middle East

■ A former British Middle East political officer, a long-time government servant of Great Britain, recently spoke at M.I.T. on "British Policy in the Middle East." The speaker was John H. Peck, C.M.G., Director-General of the British Information Services, New York. His public lecture, sponsored by the Political Science Section in M.I.T.'s Department of Economics, was held on Friday, November 16, in the Library Lounge of the Hayden Library Building.

Mr. Peck was a member of Winston Churchill's personal staff throughout Mr. Churchill's service as Prime Minister during World War II. Later, from 1954 to 1956, he was head of the Political Division of the British Middle East Office where his principal task was political liaison with land and air headquarters of the Middle East Forces.

## Biophysics Consultant

■ Richard H. Bolt, Professor of Acoustics in the Department of Electrical Engineering, and Director of the M.I.T. Acoustics Laboratory, has been granted a year's leave of absence to assist the National Institutes of Health in expanding its program for the sponsorship of biophysical science. Dr. Bolt will work with the Study Section on Biophysics and Biophysical Chemistry of the National Institutes of Health, U. S. Public Health Service, under an appointment as principal consultant. His office will be at M.I.T.

As professor of acoustics on leave, he will resign from the directorship of the Acoustics Laboratory, and administrative responsibility for the Institute's research in acoustics will be vested in the Department of Electrical Engineering.

In commenting on Dr. Bolt's new assignment, Francis O. Schmitt, Institute Professor of Biology and chairman of the Study Section, said:

"In this key position as principal consultant to the Study Section on Biophysics and Biophysical Chemistry of the National Institutes of Health, Dr. Bolt will be responsible for the planning and co-ordination of a new program aimed at the stimulation and development of the rapidly growing field of biophysics on a national scale.

"The application of the physical and engineering sciences to the investigation of the life sciences," Dr. Schmitt added, "is opening up ever-expanding horizons in biomedical research. Sensitive to the opportunities which this situation offers in the research and training program of the National Institutes of Health, this federal agency has recently placed substantial funds at the disposal of the Study Section with which to stimulate research and training in biophysics.

"This action represents a challenging opportunity to channel a significant fraction of the rapidly increasing federal funds for medical research into this field. Working with the Study Section as its chief executive and planning officer, Dr. Bolt will be concerned with the stimulation of teaching and research in biophysics and with the interchange of ideas and information on an interdisciplinary basis."

Professor Bolt brings to this program a wide range of relevant experience. During World War II, he served as scientific liaison officer for the Office of Scientific Research and Development in London and later as a chief technical aide of the National Defense Research Committee. As a member of the American Institute of Physics Policy Committee, he was chairman of the committee that developed the publication *Physics Today*. He has been president of the Acoustical Society of America and chairman of the Joint Armed Forces — National Research Council Committee on Hearing and Bioacoustics. Professor Bolt has been at M.I.T. since 1945.

Dr. Bolt is president of the International Commission on Acoustics and was chairman of the organization of the International Congress on Acoustics that was held at M.I.T. and Harvard last June. He is also currently a member of the Advisory Panel on Medical Sciences for the Secretary of Defense.

## On the Horizon

**January 30, 1957** — Midwinter Meeting of the Alumni Association. Walker Memorial, M.I.T. Campus. (Dinner 6:00 P.M. Reservations should be made through Alumni Office, Room 1-280, M.I.T.)

**February 2, 1957** — 9th M.I.T. Alumni Regional Conference, Tulsa, Okla. Theme: "Conference on Engineering and Science — M.I.T.'s Salute to Oklahoma's Golden Jubilee." **Speakers:** President Killian; Deans E. P. Brooks, '17, and George R. Harrison; Professors Warren K. Lewis, '05, Robert R. Shrock, John G. Trump, '33, and Jerrold R. Zacharias. (For further information, consult Barrett B. Russell, 3d, '43, E. I. du Pont de Nemours and Company, 1811 South Baltimore Avenue, Tulsa 19, Okla.)

**February 16, 1957** — 10th M.I.T. Alumni Regional Conference, Chicago, Ill. **Speakers:** President Killian; Deans E. P. Brooks, '17, and Pietro Belluschi; Professors Walter G. Whitman, '17, and John E. Arnold, '40. (For further information, consult John R. Kirkpatrick, '48, Arthur D. Little, Inc., 9 South Clinton Street, Chicago 6, Ill.)

**February 22-25, 1957** — "M.I.T. Week End in Havana," M.I.T. Club of Cuba. (For reservations, consult Antonio Helier Rodriguez, '21, Concordia 61, Havana, Cuba.)

**March 14-16, 1957** — 9th Annual Fiesta, M.I.T. Club of Mexico, Mexico City, D.F. (For reservations consult Clarence M. Cornish, '24, Margaritas 139, Villa Obregon, Mexico 20, D.F., Mexico.)

**June 10, 1957** — 23d Alumni Day, 1957, M.I.T. Campus in Cambridge.

## Derwent Whittlesey: 1890-1956

■ Derwent Whittlesey, Visiting Professor of Economics in M.I.T.'s Department of Economics and Social Science, died at the New England Deaconess Hospital on November 25, 1956.

Dr. Whittlesey, who had been professor of geography at Harvard University since 1928, came to M.I.T. in September to give a new graduate seminar on strategic and political geography, a field in which he was an internationally known authority. Author, historian, and traveler-researcher, he also served as consultant to the U.S. Government during World War II and was a member of the National Research Council for 13 years.

A native of Pecatonica, Ill., Dr. Whittlesey received his bachelor's, master's, and doctor's degrees at the University of Chicago and held honorary degrees from Harvard University and Beloit College. He served on the faculties of Denison University and the University of Chicago before his appointment to Harvard, where he became full professor in 1943. Dr. Whittlesey was an honorary fellow and gold medalist of the Chicago Geographical Society, and a fellow of the American Academy of Arts and Sciences.

## Individuals Noteworthy

■ Prominent in late autumn's news were 17 promotions, elections, or appointments as set forth below:

*Franklyn M. Stibbs*, '11, as a Director of the Connecticut Building Congress, Inc. . . . *Joseph W. Barker*, '16, retiring President of the American Society of Mechanical Engineers, as President of the Engineers Joint Council . . . *Robert E. Wilson*, '16, as a member of the General Advisory Committee of the Atomic Energy Commission . . .

*E. P. Brooks*, '17, as Director of the American Management Association . . . *Robert S. Mulliken*, '17, to the Ernest Dewitt Burton distinguished service professorship of the University of Chicago . . . *David P. Brown*, '20, as Treasurer of the Society of Naval Architects and Marine Engineers . . .

*Edwin S. Burdell*, '20, as chairman of the Coast Guard Academy Advisory Committee . . . *Augustus B. Kinzel*, '21, as President of the American Institute of Mining, Metallurgical, and Petroleum Engineers . . . *F. Marion Banks*, '22, as a Director of Servomechanisms, Inc. . . .

*Rodolphus K. Turner*, '23, as Vice-president of Carbide and Carbon Chemicals Company . . . *Arthur E. Benson*, '26, as development manager of the International Division, United States Rubber Company . . . *William C. Sessions*, '26, as Vice-president, Board of Trustees, Cleveland Health Museum.

*Marshall W. Jennison*, '27, as chairman of the Department of Plant Sciences, Syracuse University . . . *Frank C. Staples*, '27, as President and Vice-chairman of the American Molasses Company . . . *Russell C. Taylor*, '27, as a Director of A.C.F. Industries, Inc. . . .

*William V. Goodhue*, '39, as Director of Research and Engineering, Universal Winding Company . . . *Francis W. Sargent*, '39, as Commissioner of Natural Resources of the Commonwealth of Massachusetts.

■ Particular congratulations were being extended to three Alumni as *re-electees*, namely:

To *Thomas C. Desmond*, '09, as a Senator of the State of New York to enter upon his 27th consecutive year of service in that office, thus establishing his record of serving longer than any other member of either branch of the New York State legislature; and upon his re-election for a 10th consecutive year as President of the Phi Beta Kappa Associates . . .

To *Richard Roth*, '28, chosen for a second term as President of the New York Society of Architects . . . to *Wilbur N. Landers*, '30, named for the 11th time as Secretary of the Society of Naval Architects and Marine Engineers.

■ Special honors coming recently to 12 Alumni and members of the Institute Faculty included:

To *Irving W. Wilson*, '11, an honorary doctorate of laws, by the University of Pittsburgh . . . to *Harold F. Dodge*, '16, an honorary Professorship of Statistical Quality Control, by Rutgers University . . . To *Herbert J. Gilkey*, '16, honorary membership in the American Society for Testing Materials . . .

To *Robert E. Wilson*, '16 and *Wheeler G. Lovell*, '24, Certificates of Appreciation, by the American

Petroleum Institute and presented in Chicago at a meeting of which the presiding officer was *William J. Sweeney*, '28 . . .

To *Edward P. Warner*, '17, retiring President of the Council of the International Civil Air Organization, the 1956 Wright Brothers Memorial Trophy, by the National Aeronautic Association . . . To *Andrew I. McKee*, '21, the David W. Taylor Medal, by the Society of Naval Architects and Marine Engineers . . .

To *Edward W. Comings*, '34, the William H. Walker Medal, by the American Institute of Chemical Engineers . . . to *R. Kenneth Bullington*, '37, the Stuart Ballantine Medal for "advancement of space communications by means of beyond the horizon tropospheric wave propagation," by the Franklin Institute . . .

To *Francis O. Schmitt*, Institute Professor, jointly with Professor Karl Meyer of Columbia, a 1956 Albert Lasker Award for their separate biochemical and physical studies of collagen and connective tissue giving new light on rheumatic diseases, by the American Public Health Association . . .

To *Edwin H. Land*, Visiting Institute Professor and Fellow of the School for Advanced Study, the Howard N. Potts Medal for "ingenious development of a practical hand camera and a process to expose and develop the negative and create a good positive simultaneously," by the Franklin Institute.

## Visiting Professor of Mathematics

■ *Joaquin B. Diaz*, noted applied mathematician, has joined the Faculty of the Institute for the current year as visiting professor of mathematics, *Julius A. Stratton*, '23, Chancellor, recently announced.

Dr. Diaz has been research professor at the University of Maryland's Institute for Fluid Dynamics and Applied Mathematics since 1950. In recent years, he was also research consultant for the Los Alamos Scientific Laboratory and the Naval Ordnance Laboratory at Silver Spring, Md. Through extensive writing he has contributed much to the fields of applied mathematics, boundary value problems, partial differential equations, and elasticity.

Born in Arecibo, Puerto Rico, Dr. Diaz attended Washington and Jefferson College and received his bachelor's degree at the University of Texas in 1940, his Ph.D. at Brown University in 1945. He served on the research staff at Brown from 1943 to 1946, conducting research for the National Advisory Committee for Aeronautics, Pratt and Whitney Aircraft Corporation, and the Watertown Arsenal.

In 1946, Dr. Diaz was appointed assistant professor of mathematics at Carnegie Institute of Technology, and the following year he returned to Brown University as assistant professor. He was named associate research professor of mathematics at the University of Maryland in 1950, and research professor in 1956.

Dr. Diaz is a member of the American Mathematical Society, Phi Beta Kappa, and Sigma Xi. During 1950-1952, he was assistant editor of the *Proceedings of the American Mathematical Society*, and this year has been editor of *Proceedings of the Maryland Conference on Differential Equations*.



■ With the advent of the new year of 1932, the original group of 55 alumni "Honorary Secretaries" began representing the Institute and its Alumni Association in various centers of the United States, Canada, and Mexico. Chosen for their experience in fields of engineering and business, these honorary secretaries, as the announcement said, were "to provide sources of qualified first-hand information on education in science and engineering, architecture, and business and engineering administration at Technology."

"These academic ambassadors will consult with prospective students from their districts and assist them in determining their qualifications for a technical education. Their work assumes particular importance because of the rapid growth in the number of applicants for admission to the Institute and the necessity for giving precedence to the best students."

Since 1932, further honorary secretaryships have been created so that with the advent of 1957 there is a total of 257, forming the backbone of an Educational Council numbering 678 Alumni. Three of the 55 honorary secretaries appointed in 1932 are still serving actively in that capacity, namely: Terrell Bartlett, '06, at San Antonio, Texas; Frank F. Bell, '10, at Dallas, Texas; and Frederick W. Barker, '12, at Syracuse, N.Y.

. . . Announcement was made in The Review "of a new and marvelously sensitive electrocardiograph for studying the action of the heart," the device being the result of joint research carried on by Vannevar Bush, '16, Professor of Electrical Power Transmission at the Institute, and Professor W. D. Reid, Associate Member in Cardiology of the Evans Memorial Hospital in Boston.

. . . Based upon an experimental 1,500,000-volt model of Professor Robert J. Van de Graaff's new method of producing hitherto unattainable high voltages, "construction of a generating apparatus designed to produce direct current at the amazing potential of 15,000,000 volts is to be undertaken at M.I.T. within the next few months."



Wide World

Robert J. Van de Graaff, Associate Professor of Physics (at left), demonstrating his experimental 1,500,000-volt generator model to the late President Karl T. Compton.

. . . Congratulations were being extended to Lamot du Pont, '01, as President of the Manufacturing Chemists Association; to Charles Camsell, '09, upon receiving the Gold Medal of the British Institution of Mining and Metallurgy; and to Leslie R. Groves, Jr., '17, then Lieutenant of the Corps of Engineers, U.S.A., upon his decoration as Chevalier of the Order of Nicaragua in recognition of his restoration of the waterworks of Managua following the March, 1931, earthquake.

## GAMES PLAYED

Date	Event	Winner	Scores	Loser
1956				
Nov. 30	Vars. Rifle	M.I.T.	1410	B. C. 1375
Dec. 1	Vars. Basketball	M.I.T.	74	Trinity 65
Dec. 1	Frosh Basketball	M.I.T.	72	Trinity 71
Dec. 1	Vars. Hockey	Dartmouth	8	M.I.T. 1
Dec. 1	Vars. Wrestling	Wesleyan	15	M.I.T. 12
Dec. 1	Frosh Wrestling	Wesleyan	18	M.I.T. 10
Dec. 5	Vars. Basketball	M.I.T.	73	Clark 64
Dec. 5	JV Basketball vs. M.I.T.			
	Frosh	Frosh	68	JV 55
Dec. 5	Frosh Hockey	Scrimmage		No Score
Dec. 7	Vars. Hockey	N'earstern	15	M.I.T. 4
Dec. 8	Vars. Basketball	Amherst	67	M.I.T. 65

Date	Event	Winner	Scores	Loser
1956				
Dec. 8	Vars. Rifle	M.I.T.	1460	Dartm'th 1338
Dec. 8	Vars. Squash	Dartmouth	7	M.I.T. 2
Dec. 8	Vars. Swimming	Bowdoin	44	M.I.T. 42
Dec. 8	Vars. Wrestling	Tufts	17	M.I.T. 10
Dec. 8	Frosh Wrestling	Tufts	14	M.I.T. 14
Dec. 11	JV Basketball	Harvard	70	M.I.T. 30
Dec. 12	Vars. Basketball	Springf'd	78	M.I.T. 60
Dec. 12	Frosh Basketball	M.I.T.	92	Exeter 69
Dec. 12	Vars. Hockey	Hamilton	5	M.I.T. 1
Dec. 12	Vars. Swimming	M.I.T.	60	R.P.I. 25
Dec. 12	Frosh Swimming	M.I.T.	60	Dean 16
Dec. 14	Vars. Squash	Wesleyan	8	M.I.T. 1
Dec. 15	Vars. Squash	M.I.T.	9	Adelphi 0

## Visiting Committee Report on Aeronautical Engineering

■ Eight of the nine members of the Visiting Committee on the Department of Aeronautical Engineering convened on February 19 and 20, 1956, General Joseph T. McNarney unavoidably being absent.\* On Sunday evening, February 19, General James H. Doolittle, '24, chairman, was host to members of the Committee and to members of the Department and M.I.T. Administration at the Parker House in Boston. Following dinner, Professor C. Stark Draper, '26, Head of the Department, outlined three important areas which he hoped the Committee would consider at its business meeting the following day: student enrollment, educational curriculum in the broad field of propulsion, and long-range plans for establishing optimum size of the Department.

On Monday, February 20, when the Committee met at the Institute, the aims and objectives of the Department were outlined by Professor Draper, and departmental operations were summarized by Executive Officer Walter McKay, '34, Associate Professor of Aeronautical Engineering. In addition, the research and teaching activities were summarized by members of the Department's Faculty and staff. The members of the Committee gave careful consideration to a broad range of topics on teaching objectives, curriculum (including propulsion studies, guided missiles, and orbital vehicles, computing equipment, communication), and departmental planning (including future enrollment, equipment, and facilities), staff, and student population. The report of the Committee is too detailed and long to be given here. However, the Committee's conclusions and recommendations may be summarized as follows:

1. It is recommended that major efforts be continued to attract students into Aeronautical Engineering, particularly for the Graduate School.
2. It is recommended that the Department expand its education effort in the areas of aeronautical propulsion by increasing the amount of time allotted to this subject, and by revising the course content so that the propulsion field exerts appropriate attraction for students.
3. It is recommended that the Department vigorously extend its planning beyond the immediate future to include provisions for meeting the educational requirements that are anticipated in the future. This planning should include equipment, facilities, and staff under the assumption that present limitations may be removed and that a much larger number of students may be available.

The report of the Visiting Committee was submitted on July 17, was received by the Executive Committee in August, and was considered by the M.I.T. Corporation at its meeting on October 1. The report was received in The Review Office for publication in The Review on October 25, 1956.

\* Members of this Committee for 1955-1956 were: James H. Doolittle, '24, chairman, Godfrey L. Cabot, '81, Ray P. Dinsmore, '14, Theodore C. Lonquest, '25, Paul S. Baker, '29, Athelstan F. Spillhaus, '33, William A. M. Burden, Robert E. Gross, and Joseph T. McNarney.

## Russian Roulette

■ Back in the violent days of the Western American frontier, everyone went armed, and a common cause of death was acute lead poisoning in the form of a bullet in some vital part of the body. Today, in peacetime, one is inclined to assume that only criminals and law enforcement officers are at all apt to meet their end by being shot. That this assumption is groundless appears from consideration of the rather startling facts concerning fatal firearm accidents. Such accidents claim some 2,200 lives a year in this country, and are exceeded as a cause of accidental death only by automobile accidents, falls, burns, and drowning.

How can shooting mishaps occur so commonly? Many happen during the hunting season; indeed, nearly two fifths of the fatal firearm accidents happen during October, November, and December. This statistic will surprise no one who has set forth for a quiet tramp in some woodland area in the late fall, only to encounter guns going off on all sides and perhaps an occasional bullet whizzing through the foliage nearby.

Many hunters never touch their guns from one season to the next, and hence may be clumsily unfamiliar with their lethal weapons when they first sally forth into the woods each fall. Besides, to some, each year's hunting expedition is an annual opportunity to shuffle off domestic ties, go off with "the boys," and enjoy liberties that may include alcoholic indulgences.

A most surprising fact, however, is that fatal shooting accidents occur over twice as frequently in homes as in the hunting field. Most of these tragic mishaps come from heedless handling of loaded weapons—often assumed to be unloaded—for the purpose of cleaning or demonstrating them.

Nearly 4 per cent of the 302 fatal accidental shootings of policyholders recently studied by a leading life insurance firm resulted from a practice not wholly accidental in nature—the macabre game called "Russian roulette." As the reader must know, this is a display of bravado whereby the cylinder of a revolver containing one live cartridge is spun by a participant, who then applies the muzzle to his temple and pulls the trigger, on the chance that the hammer will fall on an empty chamber.

How could the pointless human wastage from accidental shooting be stopped? Like all social problems, this one may be tackled either by legal or else by educational means. England has virtually legislated firearms out of existence. Even English police are largely unarmed. But every American citizen has the constitutional right to bear arms, so that the approach in this country has been educational. Sportsmen's associations, and firearm and ammunition manufacturers devote much effort and money to educating people, young and old, on the very special precautions that need to be taken in the handling of firearms. As to the half-accidental, half-suicidal deaths from Russian roulette, it is doubtful whether either compulsion or education could have much effect on the sort of individual inclined to indulge in this kind of sport.

## Recently Appointed

■ President James R. Killian, Jr., '26, recently announced the following new appointments:

Robert L. Kyhl, '47, Associate Professor of Electrical Engineering, has had 15 years' experience in microwave and electronics research. With degrees from the University of Chicago and M.I.T., he has been a staff member of M.I.T.'s Electronics, Insulation Research, and Radiation Laboratories; Stanford University's Microwave Laboratory; and General Electric's Research Laboratories.

Patrick D. Wall, Associate Professor in the Department of Biology, is widely known for his research in communications biophysics and neurophysiology. For the past eight years he has taught physiology at Yale, Chicago, and Harvard Medical Schools. A British citizen, Dr. Wall received his medical and surgical degrees at Oxford University.

The following have been appointed assistant professors:

Eugene Bell, in the Department of Biology. Best known for researches in ultrasound, recently applied to studies in embryology, Dr. Bell now teaches at M.I.T. and conducts bioacoustical research at the Massachusetts General Hospital. He holds degrees from New York, Rhode Island, and Brown Universities.

Frank B. Cuff, Jr., '51, in the Department of Metallurgy. He was graduated in metallurgical engineering from Rensselaer Polytechnic Institute and received his doctorate at M.I.T., serving as research assistant and D.I.C. staff member since 1950.

Robert L. Fleischer, in the Department of Metallurgy. A specialist in physical metallurgy, he received his bachelor's, master's, and doctor's degrees at Harvard University, where he was teaching fellow and research assistant from 1954 to 1956.

John Granlund, 10-44, in the Department of Electrical Engineering. An M.I.T. graduate, he has for 10 years conducted research on electrical communications, FM, multipath transmission, and scatter propagation in the Institute's Research Laboratory of Electronics and at Lincoln Laboratory.

Davis H. Howes, in the Department of Economics and Social Science. A graduate of Yale and Harvard, he was assistant professor of psychology at Tulane University, psychologist in the U.S.A.F. Operational Applications Laboratory, and fellow at the Center for Advanced Study in the Behavioral Sciences.

Arthur K. Kerman, '53, in the Department of Physics. In two years at the Institute for Theoretical Physics, Denmark, he has been National Research Council (Canada) fellow and research physicist. He is a graduate of McGill University and of M.I.T.

John A. Swets, in the Department of Economics and Social Science. Applying acoustics to psychology, Dr. Swets was faculty consultant to Electronics Defense Group at the University of Michigan from 1954 to 1956. He received his degrees at the University and also served as instructor in psychology.

Roger W. Wescott, in the Department of Humanities. With degrees from Princeton and Oxford, he taught humanities and sociology at Florida, Boston, and Tufts Universities, and was a Rhodes Scholar.

## Record Event

■ That M.I.T. is known for its contributions to science, engineering, and architecture is generally and widely known. That the Institute is also able to make noteworthy contributions in arts and humanities has become equally true during the past decade, even if not yet so widely recognized. Among the students — and Faculty — at M.I.T., music has long played a stimulating and significant role. Now M.I.T. has gone "on record" with three disks, called "Music at M.I.T.," which have been released recently by Unicorn Records, an enterprising young Boston concern.

In order that an unbiased account of "Music at M.I.T." may be brought to readers of *The Review*, we report, without comment, what the *Christian Science Monitor* had to say about the Unicorn recordings. Says the *Monitor* in its issue of September 25, 1956:

The term "engineering," long synonymous with M.I.T., must now include the idea of record engineering. For although the technical work was done by an outsider, the youthful master of the science and art of tape recording, Peter Bartók (son of the great composer), it is the school which has supplied the ideal performing locations. The first hurrah, therefore, is shared by Mr. Bartók with the Kresge Auditorium and the M.I.T. Chapel in Cambridge.

On the humanities faculty of the Institute for several years has been the Swiss pianist-composer-philosopher Ernst Levy, a musician of towering stature. On UNLP 1033 he plays Beethoven's Sonatas Opus 109 and Opus 110 in masterly fashion, both technically and interpretively. One may disagree with some of Mr. Levy's concepts, which are often highly individualistic and untraditional; but one is likely to be enthralled by his perceptiveness, the deep thought and firm conviction that shine through all his music-making. The readings, accomplished at the Kresge Auditorium with infinite care and patience, are splendidly recorded.

In the same responsive hall, Roger Voisin and his Brass Ensemble from the Boston Symphony Orchestra have made a companion disk to their earlier one, "The Golden Age of Brass." It is titled "The Modern Age of Brass" (UNLP 1031) and contains four outstanding works of so-called "brass chamber music."

There is the demanding and substantial "Music for Brass Instruments" by the German-born American composer Ingolf Dahl, Paul Hindemith's virile "Morgenmusik" (an early landmark in the literature — 1932), Nicolai Berezowsky's brilliant and entertaining "Brass Suite," and Robert Sanders' solid and attractive "Quintet in B-flat." The playing is unsurpassable in security and "bite," and the sound is top-notch as expected. Good notes by Stuart Grover.

Perhaps the most astounding sonic achievement of the set is the recording of four Handel Organ Concerti in the "windowless brick cylinder" of the M.I.T. Chapel (UNLP 1032). Only 50 feet in diameter, the much-argued-over building has turned out to be a flawless recording studio. The young organist of St. Paul's Cathedral in Boston, Lawrence Moe, makes the superb little Holtkamp organ speak with the finest color combinations. . . .

The "Unicorn Concert Orchestra" is conducted with an assured sense of form and balance by M.I.T.'s music director, Professor Klaus Liepmann, to whose vision and devotion much of the artistic renaissance of the Institute must be credited. One has no hesitation in placing the disk at the top of the available recordings of Handel's invigorating organ works.



## Council Meeting 320

■ As President of the Alumni Association for the current year, Theodore T. Miller, '22, opened the 320th dinner meeting at the Faculty Club on the evening of November 26. Before an audience of 142 members and guests, Mr. Miller's first official duty was to present a gavel to Dwight C. Arnold, '27, commemorating his year of service as the 62d President of the Alumni Association for 1955-1956.

John W. Kilduff, '18, who had been appointed chairman of a special committee responsible for obtaining 100 per cent participation in the Alumni Fund by members of the Council, reported that 41 per cent of this group had already contributed as of November 26. He also expressed the hope that 100 per cent participation would be achieved by the next meeting, so his committee could be disbanded. As chairman of the Alumni Fund Board, Avery H. Stanton, '25, reported that 3,697 Alumni had contributed a total of \$98,480 to the Fund as of November 26. This represents an increase of 570 contributors and \$20,000 over corresponding figures for the same date a year ago.

As Secretary of the Association, Donald P. Severance, '38, reported that, since the October 29 Council meeting, 18 visits to local clubs by 17 different members of the Institute and Association staffs had been made to points as far as Seattle, San Francisco, Houston, and Charleston. He also reported plans for the Midwinter Meeting on January 30, and the Regional Meetings in Tulsa on February 2 and in Chicago on February 16.

D. Reid Weedon, Jr., '41, chairman, and David W. Skinner, '27, deputy chairman, for the 1957 Alumni Day, have nominated the following subcommittee chairmen: *Registration* — Wolcott A. Hokanson (Staff); *Luncheon* — William L. Taggart, Jr., '27; *Banquet and Entertainment* — Dr. Egon E. Kattwinkel, '23; *Publicity* — John T. Fitch, '52; and *Reception* — William Morrison (Faculty Club).

Professor H. Guyford Stever, who this summer returned to M.I.T. as Associate Dean of the School of Engineering, after 18 months as chief scientist of the U.S. Air Force, was introduced and spoke on "The New Military Aeronautics." His talk outlined the present state of aeronautical engineering with special reference to guided missiles, pilotless bombers, and ballistic missiles. The various aeronautical sciences that have grown rapidly to make possible the accelerated proliferation in aeronautics were also mentioned. Professor Stever expanded his central theme by discussing separately the four traditional fields of aeronautics: propulsion; aerodynamics; structures; guidance and control.

Final speaker of the evening was Julius A. Stratton, '23, Chancellor, who spoke on "The Evolving Scene at M.I.T." Dr. Stratton undertook the extremely difficult assignment of describing some of the important yet intangible changes that have been taking place at M.I.T. — not the obvious changes of bigness or complexity, but the more basic changes in attitudes, emphasis, and teaching methods.

Of great interest was Chancellor Stratton's review of the distribution of the M.I.T. student body by professional courses. For all of his comparisons he

chose the years of 1892-1893, 1908-1909, 1922-1923, and 1956-1957 when the Institute Presidents were respectively: Francis A. Walker, Arthur A. Noyes, '86, Samuel W. Stratton, and James R. Killian, Jr., '26. The interesting fact was brought out that the percentage of Electrical Engineering students is *not* greater than in 1892, for example. But there has been a substantial percentage increase in the enrollment in the fields requiring greater scientific background in mathematics and physics. Similar changes take place today in course distribution as classes proceed from the freshman year through the senior year into graduate work.

Much has been said of the increases in enrollment, academic budgets, and tuition over the years. However, Dr. Stratton reviewed these data from the standpoint of ratios of students to staff and average academic expenses per student. There are now approximately five and a half students per staff member — a far better ratio than at any time in the Institute's history. With the average academic expense of \$2,800 per student, tuition still pays less than half the Institute's academic expenses.

Dr. Stratton showed the phenomenal changes in curricula in the past 65 years. In 1892 neither physics nor calculus was required in the freshman year, but there was far greater emphasis on foreign languages. Much more time was devoted to language, literature, economics, and history in 1892 than in 1956. There was also strong emphasis on drawing and shop and applications half a century ago. Using the Electrical Engineering course curriculum as an example, professional work was introduced into the curriculum in the senior year — far later than now.

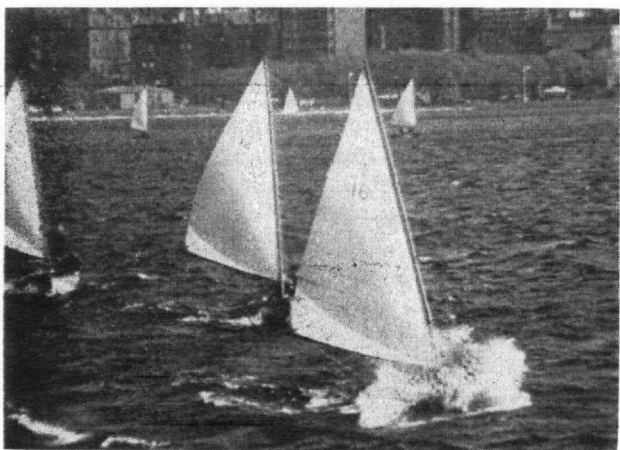
This is in deep contrast to the present time when strong courses in calculus and physics are given the first term of the freshman year and when the steady increase in numbers of sections of intermediate and advanced work in mathematics and physics is demanded by students of other courses, such as Electrical Engineering. Professional work is given earlier; the increased emphasis on humanities comes not from an increase in time devoted to the subjects but from improvement in caliber, sequence, and relevance of the present humanities program.

And what of these problems in the future? Engineering education is faced with the necessity of adjusting itself to a rapidly changing world for which we need clear precepts for long-range planning. The specific issues involved are too many to be listed, and many have yet to be formulated clearly. Among these issues are the following: How should M.I.T. respond to the nation's need for professional man power in engineering? Can undergraduate education in engineering serve the role of professional education as well as general education? Where are the proper boundaries in engineering education between applied science and contemporary practice? How can engineering education retain its role as the basis of training for future leadership in industry? How can M.I.T. strengthen the creative resourcefulness and imagination which are indispensable to the vigorous industrial activity of the nation, but so often suppressed in the academic environment? Should M.I.T. undertake specialized education for selected people with exclusive specialization in the applied sciences?



■ A 16-millimeter sound motion picture in color, depicting extracurricular life of Technology students, has recently been completed and is available, on loan, to Alumni Clubs, Educational Counselor groups, and others having need for such material. Produced by Oscar H. Horovitz, '22, with the assistance of the Institute Committee, the film was originally made at the suggestion of B. Alden Thresher, '20, Director of Admissions.

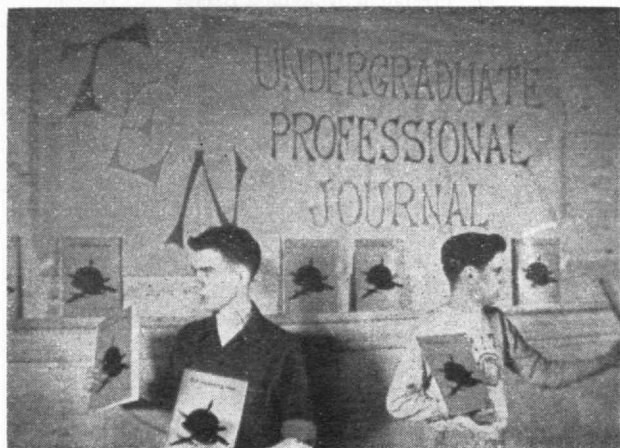
To emphasize the unusual social and extracurricular activities which are available to students entering the Institute, the film entitled "The Social Beaver" deals almost exclusively with the social, recreational, and extracurricular activities to be found at M.I.T. Alumni who still think of the Institute as a haven for "brown baggers" will find many athletic, hobby, student government, and social ac-



tivities portrayed in this half-hour film. For example, crew and dinghy sailing now play a major part in M.I.T. aquatic sports, as does swimming, also. Students gain a good knowledge of publication procedures through work on *The Tech*, *Tech Engineering News*, *Voo Doo*, and *Technique*.

Musical events are now a major attraction for many students after classes end in the afternoon. The Railroad Club, Hobby Shop, Radio Club, broadcasting activities, Flying Club, and Rocket Club are now popular activities which, for the most part, were unknown to prewar generations of Technology Alumni.

A portion of the film familiar to almost all Technology Alumni is that part dealing with Field Day, in which a variety of track and field events are por-



trayed as photographed on a dark rainy Saturday in the fall of 1955.

The social side of student affairs is illustrated not only by scenes of dances, teas, and similar events, but also by depicting typical living in dormitories, fraternity houses, or in the women's dormitory. A section of the film is — appropriately enough under present conditions — devoted to activities of Technology's hundred, or so, women students, and to its colony of married students.

Although little attention is apportioned to classroom activities in this film, the intellectual demands of four years of study at M.I.T. are inferred by the last group of scenes, which show graduation exercises and the President's luncheon held immediately thereafter in the Great Court. Illustrations on this page are from "The Social Beaver."



## Calendar of Technology Sports

Date 1957	Time P.M.	Event	M.I.T. Playing	At
Jan. 8	8:30	Varsity Basketball	Harvard	Harvard
Jan. 9	7:00	Freshman Swimming	Tufts	M.I.T.
Jan. 9	8:30	Varsity Swimming	Tufts	M.I.T.
Jan. 10	4:00	Freshman Basketball	Gov. Dummer	Gov. Dummer
Jan. 10	6:45	JV Basketball	Burdette Jr. Col.	M.I.T.
Jan. 11	4:00	Varsity Hockey	Williams	M.I.T.
Jan. 11		Varsity Rifle	Wentworth	M.I.T.
Jan. 12	2:00	Varsity Fencing	Trinity	M.I.T.
Jan. 12	2:00	Varsity Squash	Williams	M.I.T.
Jan. 12	2:00	Freshman Wrestling	Roxbury Latin	M.I.T.
Jan. 12	3:00	Freshman Hockey	Middlesex	Middlesex
Jan. 12	3:00	Freshman Squash	Brooks	M.I.T.
Jan. 12	3:00	Freshman Swimming	Exeter	Exeter
Jan. 12	7:00	Varsity Hockey	Bowdoin	Bowdoin
Jan. 15	4:00	Freshman Squash	Harvard	Harvard
Jan. 15	4:30	Freshman Basketball	Harvard	Harvard
Jan. 16	6:15	JV Basketball	Wentworth	M.I.T.
Jan. 16	6:30	Freshman Hockey	Boston English	M.I.T.
Jan. 16	7:00	Varsity Hockey	Amherst	Amherst
Jan. 16	7:30	Varsity Fencing	U. of Conn.	M.I.T.
Jan. 16	8:15	Varsity Basketball	Bates	M.I.T.
Jan. 19		Indoor Track	K of C Games	Boston Garden
Jan. 26		Varsity Rifle	Coast Guard New London	
Jan. 26		Skiing	Brown U.	Eastern Slopes, N.H.
Jan. 28		Varsity Rifle	Navy	Annapolis
Jan. 30		Varsity Rifle	Army	West Point
Jan. 31		Varsity Rifle	St. Johns	St. Johns
Feb. 1		Varsity Rifle	U. S. Merchant Marine	King's Point
Feb. 2		Indoor Track	Boston A.A.	Boston Garden
Feb. 3		Skiing	Asa Osborne Trophy	Manchester, Vt.
Feb. 5	4:00	Varsity Squash	Harvard	M.I.T.
Feb. 6	6:30	JV Basketball	Wesleyan	Wesleyan
Feb. 6	7:30	Varsity Fencing	Bradford Durfee	M.I.T.
Feb. 6	8:15	Varsity Basketball	Wesleyan	Wesleyan
Feb. 9	2:00	Varsity Fencing	C.C.N.Y.	C.C.N.Y.
Feb. 9	2:00	Varsity Hockey	U. of Mass.	U. of Mass.
Feb. 9	2:00	Varsity Swimming	Coast Guard	M.I.T.
Feb. 9	3:00	Varsity Wrestling	Boston U.	M.I.T.
Feb. 9	8:30	Varsity Basketball	W.P.I.	Worcester
Feb. 9		Indoor Track	Millrose Games	New York
Feb. 10		Skiing	N.E. College Trophy	Manchester, Vt.
Feb. 12	7:15	Varsity Swimming	U. of Mass.	M.I.T.
Feb. 13	3:00	JV Squash	Middlesex	M.I.T.
Feb. 13	3:00	Freshman Swimming	St. George	St. George
Feb. 13	4:00	Freshman Hockey	Lawrence Acad.	M.I.T.
Feb. 13	4:00	Freshman Wrestling	U. of Mass.	U. of Mass.
Feb. 13	4:00	Varsity Wrestling	U. of Mass.	U. of Mass.
Feb. 13	6:15	Freshman Basketball	Boston U.	M.I.T.
Feb. 13	7:30	Varsity Fencing	Harvard	M.I.T.
Feb. 13	8:15	Varsity Basketball	Boston U.	M.I.T.
Feb. 15		Varsity Rifle	Northeastern eastern	
Feb. 15	4:00	Varsity Squash	Army	M.I.T.
Feb. 15	6:15	JV Basketball	M.I.T. Freshmen	M.I.T.
Feb. 15	8:15	Varsity Basketball	Bowdoin	M.I.T.



Curtis Studios

William L. Stewart, Jr., '23

Life Member of the M.I.T. Corporation

William L. Stewart, Jr., '23, of Pasadena, Calif., has been elected to life membership on the Corporation of the Institute, James R. Killian, Jr., '26, President, recently announced. He has been an alumni term member since 1952.

Mr. Stewart is executive vice-president of the Union Oil Company of California and has been with the company since 1923 when he was graduated from M.I.T. He is a director of a number of oil and gas corporations. During World War II he was chairman of the Refining Committee, District V Petroleum Administration for War, and of the Petroleum Industry War Council. He is a trustee of California Institute of Technology and Stanford Research Institute.

## Visiting Committee Report on Mathematics

■ Although it held no formal meeting for the academic year 1955-1956, the Visiting Committee on the Department of Mathematics\* considered the needs of the Department by means of correspondence and written reports. Current problems of enlarged staff to meet enlarged enrollment, additional space for a greater number of students and staff, and improved facilities for the library of mathematical works are similar to those previously discussed by other Visiting Committees. Although important steps have been taken in each of these categories, the same

(Concluded on page 160)

\*Members of this Committee for 1955-1956 were: Everett S. Coldwell, '15, chairman, Francis J. Chesterman, '05, Hugh S. Ferguson, '23, John Stack, '28, Brockway McMillan, '36, Albert C. Schaeffer, '36, Richard Brauer, Gustav A. Hedlund, and William R. Sears.



# Education of the Uncommon Man

**In tomorrow's technological world the best utilization of the best available brain power will be essential. To achieve this, America still has something to learn**

**by EDWIN S. BURDELL**

**M**Y chapter and verse reference for the expression "uncommon man" stems not from the work of an educator but rather from a talk made last April by the industrialist, Crawford H. Greenewalt, '22. His words are worth repeating:

"Behind every advance of the human race is a germ of creation growing in the mind of some lone individual, an individual whose dreams waken him in the night while others lie asleep.

"We need those dreams, for today's dreams represent tomorrow's realities. Yet, in the very nature of our mass effort, there lies this grave danger — not that the individual may circumvent the public will, but that he will himself be conformed and shaped to the general pattern, with the loss of his unique, original contributions . . . The great problem, the great question, is to develop within the framework of the group the creative genius of the individual . . .

"I know of no problem so pressing, of no issue so vital. For unless we can guarantee the encouragement and fruitfulness of the uncommon man, the future will lose for all men its virtue, its brightness, and its promise."

Modern society is making tremendous demands on its natural resources and even greater demands on its human components. It is absorbing the mineral wealth in prodigious quantities; but when exhaustion of known supplies seems imminent, substitutes are found and rare equivalents of organic products are synthesized from plentiful inorganic sources through the ingenious ideas and efforts of human beings. But whatever demands society has made on its human resources, it must in the future make greater ones still. As Dr. John R. Weir pointed out in the recent California Institute of Technology conference on civilization in the Twenty-first Century, "the critical limiting factor on the world's resources is not materials, energy or food, but brain power." In tomorrow's technological world the best utilization of the best available brain power will be essential. To achieve this, America has something to learn.

Our American democracy has fought shy of elite groups, whether by birth, wealth, or brains. We have promoted an egalitarianism which runs the risk of defeating our efforts to meet our more pressing needs. Our teachers are paid less than our factory workers, and their station in life financially is rated not much above that of the common soldier and salesman. Occasionally waves of anti-intellectualism threaten to stifle the exploration of the unknown, whether physi-

cal or social. The vulgar expression sometimes applied to an intellectual to the effect that "he is too smart for his breeches" has an implication of fear as well as disdain. The recent fad of applying the term "egg head" to anyone who displays unusual intellectual ability seems to imply distrust of the intellectual as a sort of misfit in a mass of conformity. Be this as it may, the development of the potential brain power of intellectually superior men and women is our greatest need. Unless we are willing to run the risk of educating a few intellectual misfits beyond their capacity of assimilation, we will never succeed in increasing the supply of indispensable men and women, the uncommon men and women.

Education for the masses is a Twentieth-Century phenomenon. During the past 50 years there has been a steady increase in the proportion of young people going to school and college. High school enrollment for the 14-17 age group rose from 11 per cent in 1900 to 80 per cent in 1954. College enrollment for the 18-21 age group rose from 4 per cent to 30 per cent. While the size of these two age groups increased by less than half, high school and college enrollments rose nearly tenfold. We now are making a college education available to 2,600,000 persons a year, and by 1960, assuming a 40 per cent college attendance of the college age group, it is predicted that 3,600,000 will be attending college. Even so, we have reason to believe that less than half of those intellectually qualified are headed for college and only half of these are able to finance the costs of a residence college experience.

Indication of our failure to use our greatest national resource is to be found in a recent report of the Conservation of Human Resources Project set up five years ago at Columbia University when Dwight D. Eisenhower was president of the University, which maintains that among those individuals with the most aptitude for learning (those who score in intelligence tests in the upper 6 per cent of the population) less than half are graduated from college. The report goes on to point out that any personnel policy which differentiates sharply between college-trained and non-college-trained is dangerous. The college-trained group includes many individuals of quite average and perhaps inferior ability, while the non-college-trained group includes many very able persons. To cite contemporary examples, both foreign and domestic — in the highly technical fields of building construction, city planning and architecture — it is in-

teresting to note that Nervi, the brilliant Italian building designer, Gropius, the distinguished German city planner, and Frank Lloyd Wright, the famous American architect, had little formal schooling.

However, the crux of the matter is not providing the facilities and means for increased numbers of youth to go to college as an end in itself. The crux of the problem is how to discover those most talented youths and to motivate them to seek the education and training needed to cope with the increasingly complex situation. If society is to survive, it must be as much concerned with the uncommon man of brains and integrity as it is with the enlightenment of the masses of mankind.

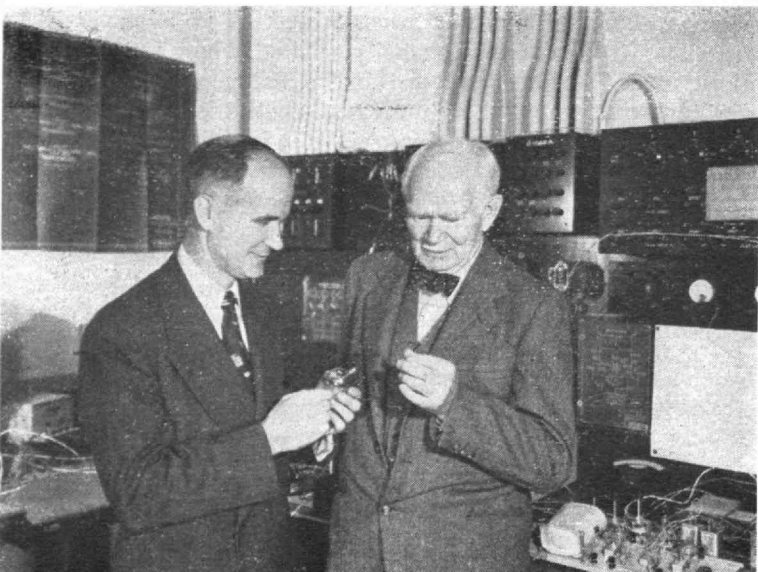
### Identifying and Motivating the Uncommon Student

The anxiety about the "tidal wave" of students which will flood our schools and colleges in the next years might well be extended to an anxiety about how to develop creative capacity in the most talented of these students. Real as is the shortage of buildings, teachers, and endowment to cope with this flood, the central problem is how to discover the talented youth in elementary and high schools in order to make sure that he is encouraged to take those subjects which will develop his interest in the pursuit of science, whether in the natural sciences or the social sciences.

In order to identify talented young people and to discover the directions in which their talents tend, it is necessary to expose as many of them as possible to as many types of activity as possible, so that out of their relative rates of growth in each activity we may determine the talents most useful to society and rewarding to the individual. This process should be initiated when the pupil is of secondary school age, at the most; and perhaps it can be achieved through a comprehensive approach that will utilize not only an improved educational program in the high schools

*William Shockley, '36 (left), who shares with two colleagues the Nobel Prize in physics for 1956 for the development of the transistor. With Dr. Shockley is Lee DeForest whose invention of the Audion, half a century ago, ushered in the era of electronics. The development of the transistor, as well as of the electron tube, illustrates the kinds of achievements which have a chance to flourish through education of the uncommon man.*

*Bell Telephone Laboratories*



but also the manifold educational influences that exist in the community.

We need new patterns of secondary school training related to newly valued capacities and professions, such as the peacemaker, co-ordinator, politician, researcher, analyst, and designer. At the same time, the resources of the community can be brought to bear on the widening awareness of the young. Industrial leaders, scientists, designers, and professional men who have a capacity for colorful direct speech would be valuable as occasional speakers to high school students who are at the stage of considering college and career. Leaders of boys and girls in organized groups in the community, such as Scouts, Little League baseball clubs and Sunday schools, could make much more of vocational discussions and excursions to hospitals, courts, studios, industries, and especially to laboratories. This may seem trite and trifling and a far cry from the serious business of matriculation into a professional school, but the teen-ager after all is sorting out a confusing jumble of stimuli, and out of that confusion, choices and rejections are being made consciously or unconsciously. "As the twig is bent, so is the tree inclined," is an old adage worth bearing in mind here. If we would increase the nation's utilization of its potential brain power, we must start early, use all the resources at our command, and use them with increasing imagination and vigor.

The teacher's role in the discovery and motivation of pupils with unusual talent cannot be overestimated. Yet in certain important areas in secondary education the scarcity of good teachers imperils any program that might be designed to encourage superior talent. The fields of mathematics and physics provide a frightening example. A representative sample of elementary and high school students reported to the Educational Testing Service in a recent survey that mathematics was their most disliked subject. Much more startling was the fact that 150 of 211 prospective elementary school teachers stated they had a long-standing hatred of mathematics. The survey observed that "Future teachers pass through the elementary schools learning to detest mathematics. They drop it in high school as early as possible. They avoid it in teachers college because it is not required. They return to the elementary school to teach a new generation to detest it." Good teaching, successful pupil performance, and a high motivation usually are found together, and it is impossible to say which are the causes and which are the results. The uncommon pupil will flourish in any situation where these factors are present but will not be likely to discover his talents in an atmosphere of avoidance and distaste for mathematics, the basic language of science. We must develop a situation at the elementary and high school level in which there is an eager lot of youngsters crying for more mathematics, instead of the vast majority avoiding mathematics.

The uncommon student needs to be encouraged and rewarded once he or she is identified. Such youth should be watched carefully by teachers and community leaders, every inducement should be offered by way of scholarship, and preferential treatment as to independent studies at the youth's own pace should be afforded. That this responsibility for de-

tection and identification of the uncommon student would be difficult for our overloaded elementary and high school teachers is obvious, but in looking for some magic to solve our problem, we may be overlooking the "geiger counter" potentialities of those teachers.

The New York City Board of Education is experimenting in this direction by developing an integrated curriculum up through the twelfth grade, which should lead to the detection and encouragement of gifted science students. The students are afforded first-hand experiences in science, including laboratory and demonstration experiences, rather than verbalizations. In order to make the most of these innovations at the elementary level, the Advisory Committee on Science Manpower, of which the writer is a member, recommended to the Board that (1) in all of the academic high school courses, students be required to take at least one year of a science, (2) guidance counselors and advisers make every effort to attract and guide more students to take advanced sciences and to dispel unfounded fears of these subjects, and (3) provisions be made for science clubs and related activities at all levels of the school program in order to develop lasting interests in science.

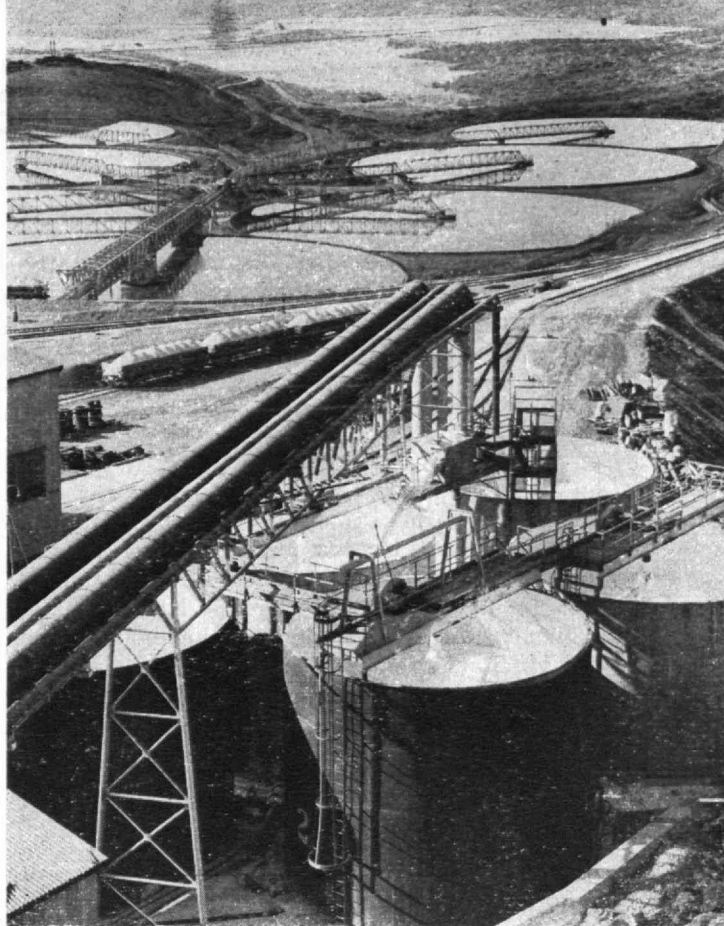
The American Association for the Advancement of Science pointed out that only 249 men and women who had prepared to teach high school physics were graduated from colleges in the United States in the spring of 1956. And only half of these few graduates will actually be teaching high school classes next fall. The other half will have drifted into other occupations because of more attractive employment opportunities. One hundred twenty-five new physics teachers are clearly far too few to replace those lost through death, retirement, and resignation from the nation's 25,000 high schools and to teach the additional classes called for by an enrollment that is well above the six million of three or four years ago and that is expected to increase to 11 or 12 million by 1965. In recent years the number of college graduates prepared to teach high school physics has dropped 74 per cent.

The Advisory Committee on Science Manpower learned that in June, 1956, the five New York municipal colleges graduated 465 teachers in all fields of secondary education, of whom 52 are equipped to teach science and 28 mathematics, and it is estimated that of those, only 35 will go into the city system to teach science and 20 to teach mathematics.

It would seem then, that a threefold program needs to be instituted at the secondary school level in order to establish the foundation for the education of the uncommon man in the future. That program must include improved patterns of high school training, increased utilization of community facilities, and a radically increased number of teachers well qualified in the scientific field in which unusually talented workers will be increasingly in demand.

#### College Experience for the Uncommon Man

If the uncommon man is to prosper most from his college experience, he must be given a professional education that is "first-rate." What characterizes such



But steel from which steel

an education? According to the 1955 Report of the American Society for Engineering Education's Committee on Evaluation of Engineering Education, the objectives of engineering education are twofold, one technical, the other social:

The first objective, the technical goal of engineering education, is preparation for the performance (or full knowledge) of the functions of analysis and creative design . . . the second objective, the broad social goal of engineering education, includes the development of leadership, the inculcation of a deep sense of professional ethics, and the general education of the individual. . . .

Although these objectives refer specifically to engineering education, they apply with equal significance to all professional education.

Few people would quarrel with these as desirable objectives. The arguments begin when the subject of "how the objective may be implemented most effectively" is raised. And methods should differ, depending on the character of the institution, its faculty, and students. The kinds of curricula and courses designed for the average student, for example, may put the uncommon student in a mental strait jacket, may restrict the full play of his intellectual and creative powers. What is the answer for the outstanding student? If he is to develop the capacity for creative originality, we cannot regiment him. Yet we cannot permit his undisciplined self-indulgence in education. The apparent dichotomy is not insoluble; the conflict can be resolved by, and only by, raising discipline above regimentation.

Perhaps the most important stimulus to the creative mind is the freedom to explore. This is borne out  
(Continued on page 168)



# Scientific and Engineering Man Power

In an age of supersonic flight, we can no longer rely on horse-drawn educational systems. A second-best educational system may be more perilous than a second-best Air Force. These, and other conclusions, are condensed from an address

by JAMES R. KILLIAN, JR.

THE United States has temporized in the face of its acute shortage of scientists and engineers," James R. Killian, Jr., '26, President, declared in New York City on November 14. The occasion was the annual dinner of the M.I.T. Club of New York at which Alfred P. Sloan, Jr., '95, honorary chairman of General Motors Corporation, received the Club's Silver Stein Award for "inspiring leadership and devoted labors" on behalf of M.I.T. The presentation was made by Crawford H. Greenewalt, '22, President of E. I. du Pont de Nemours and Company.

"There has been a Niagara of talk about how short the shortage is and why. There has been precious little remedial action. Many have been taking the patient's temperature; few have mobilized means to buy some medicine," said Dr. Killian.

"Obviously, one way to ease the shortage of scientists and engineers is to use the ones we have with maximum effectiveness. The heaviest pressure on our scientific man power at this time comes mainly from our massive and necessary defense program; over half of all scientists and engineers engaged in research and development are working directly or indirectly for the Federal Government. Obviously, this Federal program must have first attention as we seek more efficient utilization of scientific man power. This brings us immediately up against the hard fact that we have not yet reached the point in the clarification, much less the integration, of the roles and missions of the military services, where we can handle our evolving weapons systems technology with high efficiency. In our military establishment we do not have the organizational integration or the decision-making machinery to manage weapons development, and procurement, without some unprofitable duplication of effort arising out of inter-service rivalry and competition. As a result of this lack of organizational coherence and integration of roles and missions we needlessly increase defense costs, we lengthen our lead time, and we waste technological man power," Dr. Killian remarked.

In speaking of scientific and engineering man power, Dr. Killian reviewed related educational needs:

"One of the most urgent needs in our defense organization is for men, whether they be in uniform or civilian dress, who understand the integration of systems and the organizational implications inherent in our rapidly advancing weapons technology. Our uni-

versities, and particularly our engineering and military schools, have a responsibility to train this new breed of administrator and engineer, not only for government but for industry, for industry, too, has increasing need for this special kind of technological thinking and management."

Dr. Killian emphasized the need for an adequate large-scale national scholarship program and the need for substantial increases in faculty salaries to attract and hold first-rate teachers. He said that our schools generally must have greater support to cope responsibly with their swollen enrollments, and called the recommendation by the Committee for the White House Conference on Education to double our national expenditures for education a basically essential move.

Dr. Killian stressed the need for change in American attitudes toward higher education:

"We have as yet no adequate large-scale national scholarship program to help and attract into college some 200,000 gifted high school graduates who now cannot afford or are not motivated to go to college. Despite the growing aid of industry and the establishment of fine programs such as the National Merit and Alfred P. Sloan Scholarships, only about a quarter of the scholarship assistance needed is now available. While we need more financial aid to encourage needy but gifted students specifically to study mathematics, science or engineering, our top priority need is to help all of our top talent, regardless of the careers they choose. It has not yet been conclusively shown that increasing our pool of scientists and engineers will curtail the supply of needed talent in any other profession. It is more likely to be true, as the White House Conference Committee on Education observed, that "if no talent is wasted in our land, no skills will be lacking."

"In an age of supersonic flight," he said, "we cannot rely on a horse-drawn educational system. A second-best educational system," he added, "may be more perilous than a second-best Air Force."

"Despite the great intellectual edifices science has built in our Western culture," he said, "it has been opprobriously tagged as 'vocational' and 'antihumanistic,' and in the minds of many academicians, assigned an inferior place in the hierarchy of intellectual activities."

"The near collapse of science teaching in the high schools suggests that too many teachers, administra-

tors, school board members, and parents have been influenced by this latent hostility to science. The question is now appropriately asked: 'Is it possible that liberal arts education, which dominates the education of most of our teachers, has failed in part to make science a meaningful part of its education?' Certainly there is evidence that many of the nonscience majors in liberal arts colleges, by avoiding science, end with a more limited and specialized education than the science majors," he said.

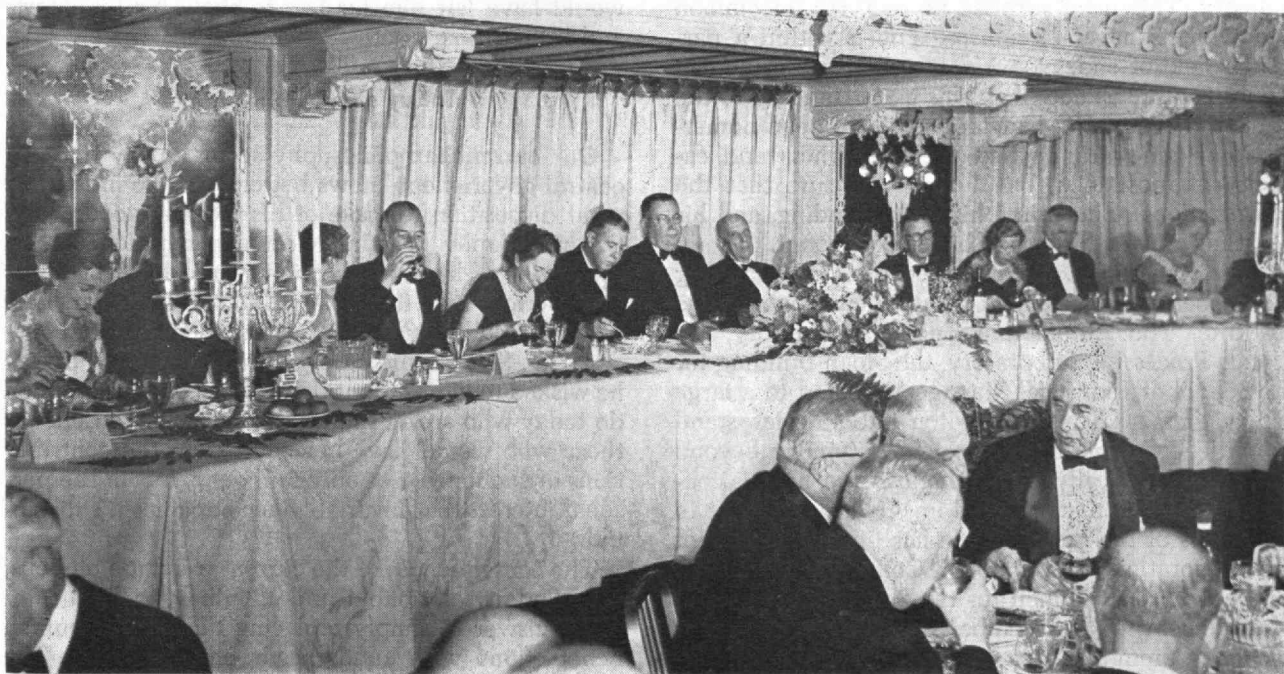
Dr. Killian also cited the need for renewed cooperation between secondary school and college teachers of science and mathematics, and urged "that our American schools of engineering and institutes of technology seek as a group to command more understanding and support throughout the nation. They have not yet, for example, achieved the recognition and status of our medical schools."

To ease the heavy demand for engineers, Dr. Killian called for an "increase in the number of technical institutes and other post high school institutions for training engineering aids, technicians, and other sub-professional personnel. We need, in fact, a greater spectrum of institutions of different and recognized levels of intellectual performance and specialization. This does not mean that some of these should be of low quality and some of high quality. It means rather that we need high-quality institutions at a variety of different points in the educational spectrum to meet the varied scope of skills and intellectual attainment required by our industrial society.

"Next, we need to increase the number of engineering schools staffed and equipped to give graduate degrees on engineering. To accomplish this will entail enlarged faculties, lighter teaching loads, more op-

portunities for faculty and students to engage in research.

"Until now our chief reliance in the United States has been on an undergraduate preparation for professional engineering careers—a system which has not universally risen above the training of technicians. While there will long continue to be an appropriate and essential place for the really professional four-year undergraduate engineering program, it must be supplemented by the expanded provision for graduate study of which I speak. Many industrial companies have been ahead of the colleges in recognizing the need for engineers of such higher attainments. As a consequence, they have evolved training programs of their own to carry their engineers beyond the levels these young men achieved in their four-year undergraduate engineering education. To the extent that industry has had to do this because of the inadequacy of the preparation of their engineers in the colleges, they have had to make up for the defaults of education. If we had the graduate school capacity to handle them, it would be more appropriate and advantageous in the long run for these men to receive their advanced training in college rather than in industry. The engineer, no less than the scientist, can benefit from advanced professional study in an atmosphere of uncommitted research. Our technological advance in the United States will be more certain if the top graduates of our four-year engineering schools proceeded on to graduate study. By their greater insight into engineering science and by increasing their mastery of the more profound and theoretical aspects of engineering, these engineers will be better equipped to advance the frontiers of technology."



F. S. Lincoln, '22

The Biltmore Hotel was the scene, on November 14, of the Silver Stein Annual Meeting of the M.I.T. Club of New York at which President Killian's "Scientific and Engineering Man Power" address was delivered. Head table guests on this important occasion included: Bernard H. Nelson, '35 (not visible in this view); Mrs. H. E. Lobdell; Theodore T. Miller, '22, President of the Alumni Association; Mrs. Thomas C. Desmond; Crawford H. Greenewalt, '22; Mrs. Mervin J. Kelly; President James R. Killian, Jr., '26; C. George Dandrow, '22; Alfred P. Sloan, Jr., '95, to whom the Silver Stein was presented; Mrs. Theodore T. Miller; Mervin J. Kelly; Mrs. Bernard H. Nelson; Thomas C. Desmond, '09; Mrs. C. George Dandrow; and H. E. Lobdell, '17, Executive Vice-president of the M.I.T. Alumni Association, in left to right order.

# Encomium

**In awarding the Silver Stein of the M.I.T. Club of New York to Alfred P. Sloan, Jr., '95, his eminent service as public-spirited citizen, philanthropist, humanitarian, Alumnus are eulogized**

by **CRAWFORD H. GREENEWALT**

**T**HERE is little need for us to review the accomplishments of the man we are honoring tonight — they are too well known to require repetition. We all know the story of his coming to General Motors when that company acquired the assets of the Hyatt Roller Bearing Company — the most distinguished and valuable asset of which turned out to be Alfred P. Sloan, Jr., '95, himself. We all know of his career in the General Motors Corporation and of his notable contributions to science, to finance, and to what has come to be called the art of management. Even a most perfunctory appraisal of Alfred Sloan as industrialist and organizing genius would, of course, call for far more time than I have been allotted, and even if I had complete *carte blanche*, I am sure I could not do it justice.

It is, furthermore, not his role as a business leader, but his role of public-spirited citizen, philanthropist, and humanitarian that concerns us tonight. In these fields, Alfred Sloan has shown the same wise and creative thinking which has characterized his career in industry. This need surprise no one, for uncommon endowments never circumscribe men within a particular field of endeavor. Mr. Sloan's grasp of human values is quite as notable as his understanding of the industrial scene. His benefactions have been numerous and generous, beyond the willingness and capacity of most men, but I am quite sure that the contributions of his mind, his understanding, and his heart far outweigh those of his bank account.

This is an M.I.T. meeting, and so it is proper for me to speak particularly of what he has done for the Institute. The Automotive Engine Laboratory, the Metals Processing Laboratory, the Sloan Building for the School of Industrial Management, and to a large extent, the Karl Taylor Compton Laboratories, stand as evidence of his financial generosity. But beyond this, and of basically greater importance, are his contributions in time, effort, and imaginative thought to the affairs of the Institute. He has been chairman of the Corporation's Development Committee, chairman of the Advisory Council for the School of Industrial Management, and a member of the very important Finance Committee, responsible for the Institute's investments. Whenever an M.I.T. problem comes up for discussion, Alfred Sloan is sure to produce ideas that are both new and productive. I know of no man to whom M.I.T. owes a greater debt.

I think there is a lesson in the life and good works of Alfred Sloan which we as citizens should study carefully, for it relates to the future of all benevolent

enterprises, and most particularly to the field of higher education.

The American university system itself, as it stands today, was largely developed out of gifts and bequests from individuals who, like Mr. Sloan, chose to share the fruits of their own achievement with all society. In the 50 years between 1880 and 1930, private gifts to education in this country amounted to more than \$2,000,000,000 — the equivalent of several times that amount today. During this period, most of this giving came from large bequests, culminating in a peak of \$140,000,000 in 1930.

Alfred Sloan, together with those who have benefited from his generousities, has reason to be thankful that he began his career at a time when it was possible for men of unusual ability to accumulate a substantial financial competence. I am afraid that even so able a man as he, had he been graduated from the Class of 1925 rather than the Class of 1895, would have found that the most productive years of his life would have left him far less to show for his efforts and little to share with the world.

## Today's Tax Philosophy

Our current tax philosophy seems to say that the central government knows better than the individual what disposition to make of his worldly goods. Had this philosophy been in effect a generation earlier, the plight of higher education would have been far more serious than it is today. The real loser of course is not the individual who has attained financial success. Mr. Sloan could surely have managed to live as he wished to live without deprivation or want, as men do today who are in similar positions. The losers are those who would have benefited from the contributions of such men, not only in money, but in the personal interest that invariably accompanies a substantial gift.

The consequences of the current trend are obvious, yet I find myself unable, and unwilling, to see a complete answer in simply replacing these great human benefactions with funds from other sources. The problem is only partially financial. When a man such as Alfred Sloan establishes an institution, he gives it far more than money. The gift carries with it a portion of his character, his personality, his strength. Here is the difference between the wise and knowing heart of a father, attentive and sympathetic to his

*(Concluded on page 164)*



# Response

**Recognizing that science and education constitute the foundation of an advancing civilization, the significant question is asked: "What better investment can we, as a people, make than in education?"**

by **ALFRED P. SLOAN, JR.**

**A**FTER all the kind things Mr. [Crawford H.] Greenewalt ['22] has said, it might be better if I remained silent. It is indeed difficult to say anything appropriate. On the other hand, I am not discouraged. I say that because I am not sure but what Mr. Greenewalt has put the cart before the horse — if I may be permitted for a moment to use a nonautomotive term. I am highly honored tonight on the occasion of your annual dinner meeting by both M.I.T. and its Alumni. But is it not true that it would be more appropriate if we, the Alumni, were to honor M.I.T.?

We take pride, and justly so, in the outstanding accomplishment of our Alma Mater. We know it has reflected expanded opportunity for our whole society. It has further enabled us to more effectively capitalize our individual opportunities. And that, it seems to me, suggests that something might be added. I mean that we, of the Alumni, must do our share in not only helping to maintain, but to advance, the high standards the Institute has created both in science and in education. To reach the top — whatever the enterprise may be — in an aggressive and ambitious society such as ours, is no light task. But to maintain that position is a far more difficult one. Self-satisfaction too often limits maximum effort. And leadership demands, and always will demand, among other things, the ability and imagination to discount future needs and events.

The future of M.I.T. depends not only on the aggressiveness of its Administration, as well as on the imagination of its Faculty in anticipating change, but also on support from you and the public at large, so essential in accepting the challenge of change. There never was a time in our history when education and its offspring — science — means so much in determining our economic and social progress and in underwriting our national security. Together they constitute the foundation of an advancing civilization.

The observations I have made are in no sense new. But some truths bear repeating endlessly — lest we forget!

*Among the honored guests at the annual Silver Stein dinner of the M.I.T. Club of New York, on November 14, were (in reading order): Thomas C. Desmond, '09, New York State Senator; Alfred P. Sloan, Jr., '95, Chairman, General Motors Corporation to whom the Club's Silver Stein was presented by Crawford H. Greenewalt, '22, President of E. I. du Pont de Nemours and Company; C. George Dandrow, '22, Vice-president, Johns Manville Corporation; and Technology President, James R. Killian, Jr. '26.*

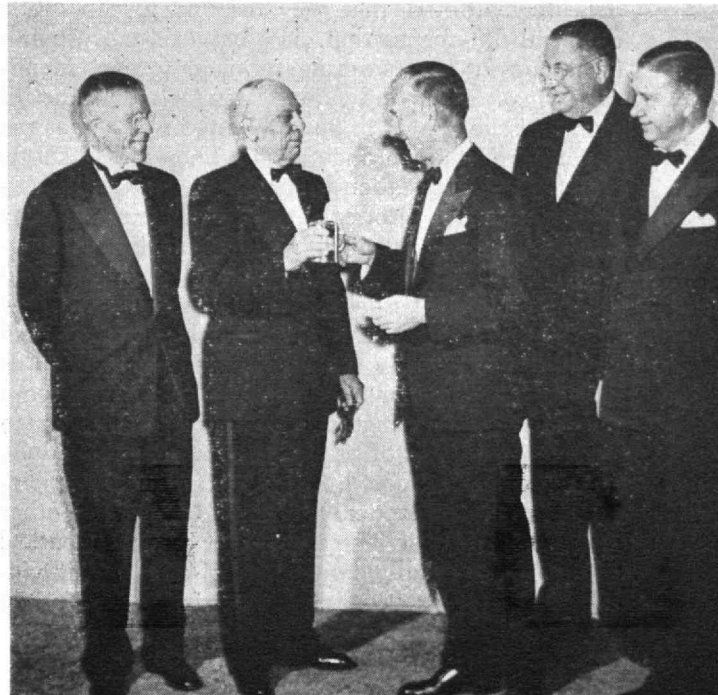
While I have tried to do my part in supporting the needs of the Institute — and in that I take a certain amount of satisfaction — nevertheless I look upon it as an exchange or the payment of a debt rather than a matter of pride. There is one exception, however, on which I can take a certain amount of pride.

On the passing of the late Dr. [Karl T.] Compton, a most impressive memorial service took place in Cambridge. I was privileged to be present. On such occasions one is apt to turn to the retrospective. A recognition of the great contribution of Dr. Compton to our society and to the Institute in particular, flowed through my mind. As it did I realized that among the numerous scientific laboratories, the class rooms, the administration buildings, the beautiful library, and all the other impressive structures that constitute the Institute — although some bore the names of generous supporters — there was nothing to remind the future generations of students as to what they owed to the talents of Dr. Compton in the great privileges they were receiving. That caused me to suggest to the Institute that a new laboratory should be constructed to be designated —

**"The Karl Taylor Compton Laboratory  
for Nuclear Science and Electronics"**

As we all know, the physical sciences was the area in which Dr. Compton was pre-eminent. The laboratory  
(Concluded on page 162)

*F. S. Lincoln, '22*



# Graft Inquiry

The acceptance or rejection of grafts, by a body, is subject of research aimed at fostering understanding of repair of human body by transplanting "spare parts"

by **FREDERIC W. NORDSIEK**

**G**RAFTING of plants has served mankind usefully since the days of ancient Rome, and has been employed through the centuries to repair injured plants and also to propagate useful plants so that their desirable characteristics are maintained. If only grafting could be used with similar ease to mend injured human tissues or to replace lost members of the human body! But unfortunately at present it cannot, because man and the other higher animals differ extremely from plants in their ability to accept tissues or organs grafted from other individuals. Thus, in plants, grafts will "take" not only when they are transferred from one individual to another of the same species, but also when transferred between members of quite widely different species. In the human being, grafts will not take unless they come from another part of the same human body, or from the body of an identical twin.

Why this great difference? Basically plant tissues are quite tolerant in their acceptance of foreign materials, whereas the tissues of higher animals ruthlessly reject foreign materials. For example — admittedly an oversimplified example — consider that a nail driven into a living tree remains in place and does no damage. But a splinter entering human flesh quickly sets up inflammatory processes, and this inflammation expels the splinter.

The mechanisms for defense of higher animals against foreign materials are so powerful, and so delicately attuned, that they respond to the subtle chemical differences that exist between corresponding tissues of any two human beings (except identical twins). These individual chemical identities of human tissue appear to be as infinite in variety as the variations of human fingerprints. They are so subtle as to defy identification by ordinary chemical laboratory methods, although they are detectable by modern physico-chemical methods such as micro-electrophoresis. Yet these individual chemical identities of human tissues are so definite that to any human body, even the corresponding tissue from another human body is just as foreign a material as tissue from an animal of some other species, or a piece of nonliving material. That is why the human body rejects grafts of tissue from another individual. The exception, as noted, is that grafts from one member of a pair of identical twins will take on the other member of the pair. This is possible because identical twins are, essentially, two halves of a single individual; therefore grafting of tissues from one to the

other is equivalent to grafts made from one location to another of the same human body.

In certain inbred strains of laboratory animals, for example white mice, grafts may be readily transferred from one animal to another. This is possible because such beasts have been inbred for so many generations that any two animals are as alike as a pair of human identical twins. It is also true that, in animals, embryonic tissue or cancerous tissue may sometimes be successfully transplanted, even to an animal of a different species. Such transplants are most apt to be successful if transferred to either the brain or the anterior chamber of the eye of the recipient animal; for reasons unknown these sites are especially receptive. Chances of success of this type of transplant can be further enhanced by administering cortisone to the recipient animal, or by irradiating it with x-rays. To encompass these exceptions, the question of transplanting tissues from one individual to another of the higher animals may be epitomized as follows: "In the higher animals, normal adult tissue may not be successfully transplanted from one individual to another, except between identical twins or their genetic equivalents."

This statement may baffle the reader who has read accounts of the apparently successful grafting of organs, such as the cornea of the eye or bones from the extremities, from cadavers to living persons. Grafts of this sort do not truly "take." They merely serve, temporarily, as a sort of scaffolding upon which the recipient of the graft may rebuild his own tissues by regeneration.<sup>\*1</sup>

How does the animal organism exercise the exquisite discrimination that leads it to accept a tissue — say skin — transplanted from elsewhere on its own body, yet reject tissue from another individual? Some weight of evidence suggests that the mechanisms involved are immunological — are allied to the mechanisms whereby animals resist infectious diseases. Thus rabbits have been desensitized (made receptive) to skin grafts from other individuals by injecting them with an antigen prepared from the skin of the prospective donor. Although this procedure did not lead to completely successful grafting it did markedly delay the sloughing off of the graft. Cortisone or irradiation makes animals more receptive to transplants of embryonic tissue or cancerous tissue; and both cortisone and x-rays are known to depress immunity mechanisms.

<sup>\*1</sup> For numbered references, see page 168.

But some authorities in the field of tissue transplantation hold that immunity mechanisms are not the answer to the body's resistance to grafts, and cite equally substantial experimental evidence to support their views. Investigators are vigorously studying the topic not only because of its theoretical interest but also because of its manifest practical importance. So far this research has been inconclusive. Indeed Dr. W. J. Dempster, an eminent British authority on skin grafting, has written, "The problem is so obscure that the widest research cooperation between experimental surgeon, clinical surgeon, serologist and geneticist will be required for its solution . . ."<sup>2</sup>

But despite this acknowledged paucity of fundamental understanding, grafting has empirical usefulness of broad scope in plants, and — within the limitations that have been sketched — in animals.

### Grafting in Plants

Grafting of plants is based on the fact that, if freshly cut surfaces of woody perennial plants are held in firm contact and covered so that the cut areas do not dry out, the tissues readily grow together and unite into one continuous whole. Grafting is occasionally used to repair injuries, as for example when trees are harmed by storms. The principal value of plant grafting, however, is in the propagation of trees and shrubs so as to maintain or establish desirable characteristics by circumventing the uncertainties and delays inherent in the propagation through seeds.

The production of seeds for the propagation of annual plants, such as wheat or corn, involves tedious and expensive precautions to make sure that the seed-bearing plant is pollinated with pollen from a plant having desirable characteristics,<sup>3</sup> and also to make sure that the seed is not contaminated with seeds of undesirable varieties or of weeds. Even then there is always danger that mutations may occur during production or germination of the seed, with consequent loss of desirable characteristics. Furthermore many useful plant varieties are hybrids<sup>4</sup> and hybrids do not "breed true" when propagated by seeds, but revert toward the characteristics of the parent varieties.

As the propagation by grafting of woody perennial plants does not involve seed production, the uncertainties of propagation by seeding are circumvented, and, in addition, the delays involved in the growing of seed and in the germination of seed are avoided. Grafting for propagation purposes is carried out by grafting a branch from an adult plant known to have the desired characteristics (called the "scion") onto a trunk or root section (called the "stock") of a younger plant with unknown characteristics, or even with characteristics known to be undesirable. The blossoms and fruit on a grafted tree or shrub are the same as those borne by the plant from which the scion is taken. The tissues of the stock perform their regular functions of transferring moisture and nutrients from the soil, and of supporting the plant, but have no effect upon the blossoms and fruit. Thus, a single adult tree or shrub that produces blossoms or fruits of the de-



P. R. Cunliffe

sired size, color, and other characteristics may be used to produce a number of other plants, with total assurance that the fruits and blossoms of these offspring plants will be identical to those of the parent tree from which the scions were cut.

Horticultural grafting has a number of other advantageous uses. Thus it may be used to hasten fruitfulness of orchard trees. Fruit trees do not bear during their early years, but branches of adult trees grafted upon a young trunk continue to yield fruit with adult vigor.

A particular advantage of horticultural grafting arises from the fact, already mentioned, that plants accept grafts from other species. Thus the plum, the peach, the apricot, the quince, and the cherry may readily be grafted on one another. In this way the orchardist can create trees designed to thrive under particular conditions. For example, if a small pear tree is desired because of limitations of available space, it may be created by grafting pear scions on a quince stock. Similarly, grafting may be employed to enable the growing of a desired fruit crop on whatever type of soil is available. Thus, plum trees favor "heavy" soil, peach trees do best on "light" soil. Plum trees that prosper on light soils are made by grafting plum scions on peach stocks; the reverse procedure is used to make a peach tree adapted to heavy soil. Similarly, grafting may be used to produce horticultural curiosities, such as a fruit tree bearing apples, pears, and peaches, or a rose bush bearing blossoms of several different varieties.



## Human Grafting

Skin grafting, archetype of the procedure in human beings, has been practiced for centuries. It is invaluable whenever an area of skin, too large to be replaced by this tissue's natural regenerative powers, is destroyed. Then pieces of skin, skillfully sliced from an unharmed section of the patient's body, are transferred to the injured area; the borrowed skin is replaced by regeneration taking place at the donor site. Even large areas may be repaired by a technique called the "sieve" graft. The skin to be transplanted is cut in perforated form, leaving islands of skin behind. These islands form a base for regeneration of skin that rapidly covers the donor site. The sieve of skin transplanted to the injured area regenerates enough skin to cover that area.

But transplantation of parts of the patient's own body is no longer limited to the skin. Now bone, cartilage, and mucous membrane are also successfully grafted, thanks in large measure to advances in plastic surgery growing out of the rebuilding of service men maimed during and since World War II. Jaw bones are made from ribs; eyelids, from neck tissue; lips, from the mouth lining; nostrils, from ear lobes.

## Twin-to-Twin Grafts

On a number of occasions the knowledge that grafts may be successfully made from one member to the other of pairs of identical twins has found practical application. In the fall of 1955, U.S. Air Force medical officers located (in the Army in Korea) Charles Madeira, the twin of airman Rodney Madeira, who had been gravely burned in an accident at Bordeaux, France. Both twins were flown to the Air Force hospital at Wiesbaden, Germany, where, with the consent of Charles, large areas of his skin were successfully transplanted to burns on Rodney's body. On at least two previous occasions (in 1952 and in 1954) the Army Medical Corps has persuaded identical twins to donate skin to badly burned brothers, each time with successful outcome.

Even more dramatic was the recent transplanting of a kidney from one identical twin to another at Boston's Peter Bent Brigham Hospital.<sup>5</sup> Both kidneys of Richard Herrick had atrophied, so that ordinarily he would have been doomed. The fact that Richard's brother Ronald was his identical (not fraternal) twin was confirmed by checking the brothers' hospital birth record and noting there had been a single placenta; by finding that their blood types are identical (by eight different blood-grouping systems); by determining that they both "taste" phenylthiocarbamide (a characteristic inherited according to the Mendelian laws),<sup>6</sup> and finally by trying small reciprocal skin grafts, which "took." Surgical transfer of one of Ronald's kidneys to Richard was then undertaken. A year later the transplanted kidney was reported to be functioning normally, and both young men were well.

## Grafting between Non-Twins

Although it is known that normal adult human tissue does not really "take" when grafted onto another person who is not an identical twin, such grafting is widely practiced. Thus skin, whether from a live

donor or a cadaver, is considered to provide a superior temporary protective covering for burned or otherwise flayed areas, even though such grafts are ultimately sloughed off. The Barnes Hospital at St. Louis, Mo., maintains a skin bank, stocked with skin from cadavers, for just this purpose. Refrigerated at four degrees C., the skin remains usable for three weeks. Skin that needs to be banked for longer periods is frozen and held at -79 degrees C., under which condition it keeps for several months. Skin from this bank is credited with saving the lives of numerous critically burned accident victims.

## Tissue Banks

Besides skin, tissues that have been transferred from one human being to another, with varying degrees of success, include bone, cartilage, fascia, corneas, nerves, blood vessels, and tracheas. Transplanting of tissue having a high proportion of inert matter with a low proportion of living cells, such as bone, cartilage or fascia, is relatively easy. The cornea of the eye is an example of a tissue consisting mainly of living cells; the outcome of corneal transplants is at best uncertain. In all instances, tissues of both high-cell and low-cell types atrophy sooner or later after transfer, but are nevertheless useful because, while they last, they provide a nonreactive scaffolding for invasion by cells of the recipient. In other words, they serve as a matrix in which the recipient may reconstruct the missing or injured organ by the natural regenerative powers of his own tissues.

Eye banks that stock corneas exist in several major cities. Since 1949, New York City has had a blood-vessel bank. The armed services have been in the forefront in the banking of spare parts for the human body. Thus, when two sailors perished instantly of broken necks in an automobile accident not far from the Naval Medical Center at Bethesda, Md., early in May, 1956, Navy officials persuaded the families to permit parts of the bodies to be taken for the center's tissue bank. Operating so that areas of the bodies visible at the funeral remained unmarred, doctors collected blood vessels, fascia, bone and skin—enough for an estimated 75 patients. This bank freeze-dries its stored tissue. Up to the time of the episode recounted, it had collected tissues from 104 individuals and distributed the tissues throughout the United States for use with more than 1,000 patients.

## Transplanting Nonhuman Tissue

Some use has been made of nonhuman tissue to repair defects in the human body. Thus, bone from young cows shows promise of usefulness in remedying human bone injuries, again serving only as a scaffolding around which the patient's own bone regenerates. This observation stimulates the question: Could not nonbiological materials be similarly used? The answer apparently is "Yes," as tubing woven of synthetic fibers—orlon, dacron, nylon, or Vinyon-N—has been used to replace segments of major human blood vessels. One middle-aged Chicagoan is reported to be thriving with a foot and a half of his femoral artery replaced by dacron tubing.

*(Continued on page 166)*

# BUSINESS IN MOTION

## *To our Colleagues in American Business...*

In making gas pressure-reducing valves and relief valves for hot water tanks, a famous manufacturer has to drill brass rod deeply. Originally the rod was free-cutting brass. When we had the opportunity to study the operations in the shop it seemed evident that Revere's Deep-Drilling Brass Rod should offer some economies. When drilled, this alloy produces very small, easily cleared chips, much smaller than free-cutting brass. The latter is excellent for most applications, particularly for external machining, or for shallow drilling, but for really deep holes, deep-drilling brass is superior. So the customer agreed to try it. The results were most satisfactory. The shop foreman reported that tool life was increased over 200%. In addition, it is possible to bore one item with a single operation, against the former practice of withdrawing the drill three times in order to clear the chips.

Another interesting experience with the same manufacturer involves a high-pressure gas valve, with a cast brass body and a brass rod stem, both machined to close tolerances. There was galling and flaking between stem and seat. Our analysis was that the two brasses were too close in hardness. The recommendation: switch to arsenical bronze valve stems, which have a higher hardness, and a greater torque strength. This proved to be the answer, making possible a better product, with fewer rejects due

to trouble at the seat. The more suitable alloy costs more per pound, but saves money in the end.

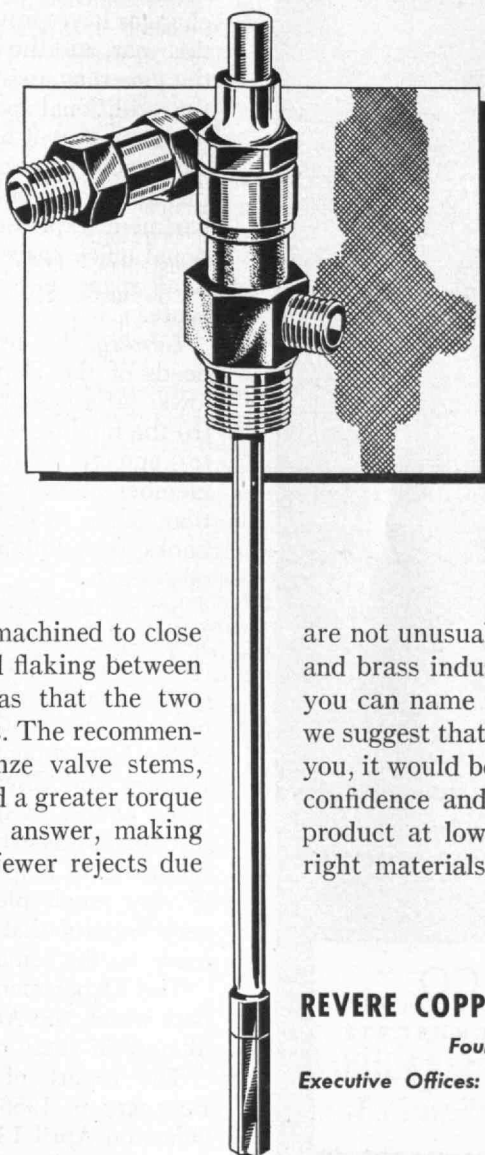
Here is a third example of our work with the same company. It was designing a new temperature-pressure relief valve for hot water tanks. The original model, hand-made for test purposes, had been machined out of solid hexagon brass rod, one inch outside diameter, and over half the weight had gone into scrap. It was recommended that

on a production basis a Revere high-leaded brass tube be used, hexagon outside, round inside. A trial order of only 2,000 pounds immediately proved itself.

The customer reported that though the tube costs more per pound, he buys less weight per foot, machine time is reduced substantially, and a much better machined surface is obtained. The latter is extremely important on the inside of the valve, which is machined to a seat.

These examples of the wisdom of paying more per pound in order to make a better product and save money in addition

are not unusual with Revere. Not only the copper and brass industry but practically every industry you can name is able to cite similar instances. So we suggest that no matter what your suppliers ship you, it would be a good idea to take them into your confidence and see if you cannot make a better product at lower costs by specifying exactly the right materials.



### REVERE COPPER AND BRASS INCORPORATED

*Founded by Paul Revere in 1801*

Executive Offices: 230 Park Avenue, New York 17, N. Y.

(Concluded from page 148)

topics are still of major importance to the Department.

Faculty members for the Department have numbered from 18 (in 1952-1953) to 20 (in 1955-1956) with an estimated 23 for the current school year. The increased enrollment for the academic year, 1956-1957, is expected to take place mainly in the junior, senior, and graduate courses. This increase is due in part to the greater size of the Junior Class and in part to the higher percentage of students who take mathematics subjects beyond the first two years. An important factor in this increase is a large increase in the number of majors in Electrical Engineering and Physics, many of whom take a great deal of mathematics.

*Space:* In the summer of 1955 the Institute converted two classrooms into four new offices for the Department and at the same time altered some of the first floor offices enabling the Department to set up a new undergraduate mathematics office. These changes have proved most helpful to the Department this year, and the Department appreciates very much the generous assistance of the Institute in furnishing this additional space. With the increased staff which the Department hopes to appoint for next year, four more new offices will be needed. The request for this additional office space has been made. The Department expressed regret that its need for additional office space comes at the very time when the total space needs of the Institute are also very acute.

*Library:* In last year's report, the main library needs of the Department were summarized as follows: (a) a systematic plan for replacing lost books; (b) the binding of unbound mathematics periodicals; (c) enough additional library staff to allow one member's time primarily for the mathematics collection; (d) a modification in the cataloguing of new books; (e) additional display racks for current issues of journals.

Some time ago the Department prepared a list of unbound journals, arranged in order of preference, and reported that significant progress has been made on the binding of these. Also progress has been made on some of the other items. Recently representatives of the Department met with the new Director of the Library and discussed in detail the various needs listed above. In the opinion of the Department the discussion was extremely fruitful. Explicit plans were discussed to help meet the needs. The Department is very much pleased with these plans and feels very hopeful that substantial progress will soon be made on the remaining items.

The Department appreciates very much the support which the Administration has given to the fulfillment of these major needs.

The report of the Visiting Committee (dated February 9, 1956) was received in the President's Office on April 13, 1956, and was received for publication in *The Review*, after suitable editing, on October 25, 1956.

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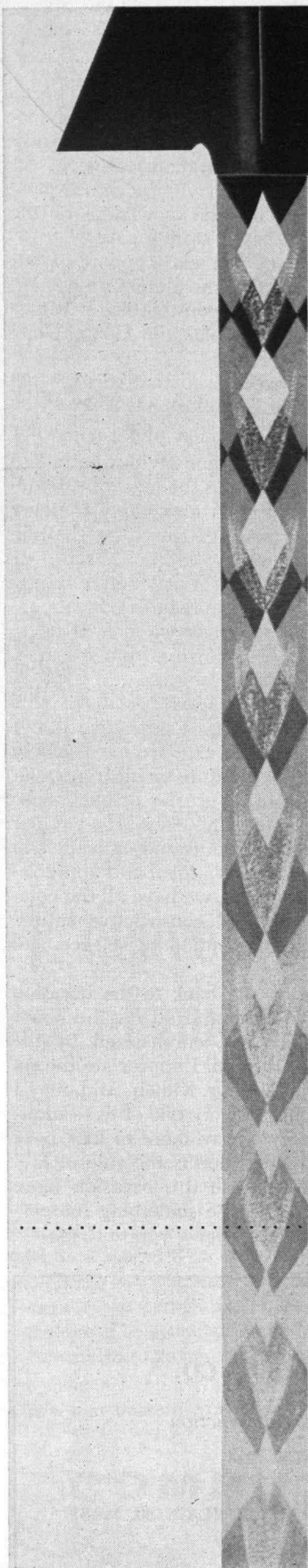
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## GUIDED MISSILE RESEARCH and DEVELOPMENT

A major guided missile research and development program has several significant characteristics that are of particular interest to the scientist and engineer.

First, it requires concurrent development work in a number of different technical areas such as guidance and control, aerodynamics, structures, propulsion and warhead. Each of these large areas in turn contains a wide variety of specialized technical activities. As an example, digital computer projects in the guidance and control area involve logical design, circuit design, programming, data conversion and handling, component and system reliability, input-output design, and environmental and mechanical design.

A second characteristic is frequently the requirement for important state-of-the-art advances in several of the technical areas. For instance, the supersonic airframe needed for a new missile may necessitate not only novel theoretical calculations, but also the design and performance of new kinds of experiments.

A third characteristic of missile development work is that such close interrelationships exist among the various technical areas that the entire project must be treated as a single, indivisible entity. For example, what is done in the guidance portion of the system can affect directly what must be done in the propulsion and airframe portions of the system, and vice versa.

These characteristics make it clear why such work must be organized around strong teams of scientists and engineers. Further, for such teams to realize their full potential, they must be headed by competent scientists and engineers to provide the proper technical management. And finally, all aspects of the organization and its procedures must be tailored carefully to maximize the effectiveness of the technical people.

Principles such as these have guided The Ramo-Wooldridge Corporation in carrying out its responsibility for overall systems engineering and technical direction for the Air Force Intercontinental and Intermediate Range Ballistic Missiles. These major programs are characterized by their importance to the national welfare and by the high degree of challenge they offer to the qualified engineer and scientist.

*Openings exist for  
scientists and engineers  
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Guided Missile Research and Development  
Aerodynamics and Propulsion Systems  
Communications Systems  
Automation and Data Processing  
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## RESPONSE

(Concluded from page 155)

tory is now under construction. It will soon be an accomplished fact. It will serve not only to honor and to perpetuate Dr. Compton's name in the Institute's scheme of things, but as an incentive in the years to come to all of us to carry on and to expand through scientific research, our knowledge of the wonders that nature still has in store for us.

In the growing need of financial support of our institutions of higher learning, the alumni groups appear to be taking increased responsibilities. It is true that while society as a whole profits, the Alumni benefit more directly. . . .

When I think of the great need that exists, I am reminded of an economic formula:

Production equals consumption plus savings.

That means that we must put our savings back into the economic stream to maintain the level of production. But does not the formula also imply that the more efficiently we can do so, the more we shall be able to increase our productivity and hence raise our standard of living? I ask you: "What better investment can we, as a people, make than in education?" The opportunity is great wherever we look. It never was greater. New discoveries flowing from research, open up new vistas of further progress. . . .

M.I.T. is fortunate in many ways. It has an enviable position. It has an ambitious and imaginative leader in Dr. [James R.] Killian, [Jr., '26]. He has not only advanced the status of the Institute on all fronts, but I am sure he will carry it to far greater heights in the years to come. He has our confidence. He has our support. We have a faculty of outstanding leaders in their respective areas. We have a loyal and appreciative Alumni. So, it seems to me, we have all the component parts of a bright and constructive future, insuring an expanding contribution to science and technology.

These few words bring me back to the occasion this evening. I thank you one and all for the honor you have bestowed upon me, emphasized by the award of the Club's Silver Stein. I appreciate the remarks of Mr. Greenewalt and Dr. Killian. And, may I add this: The time comes to every one of us — and it has come to me — when we have more to look back on than to look forward to. Such is the rule of life! For that reason I shall cherish this occasion more than I can tell you. It gives me something more to look back on. And for that — I have you to thank!



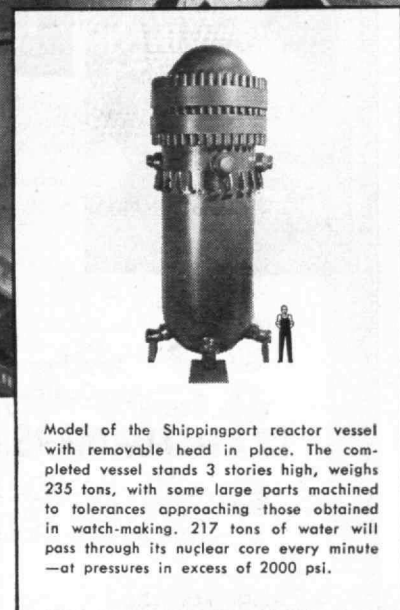
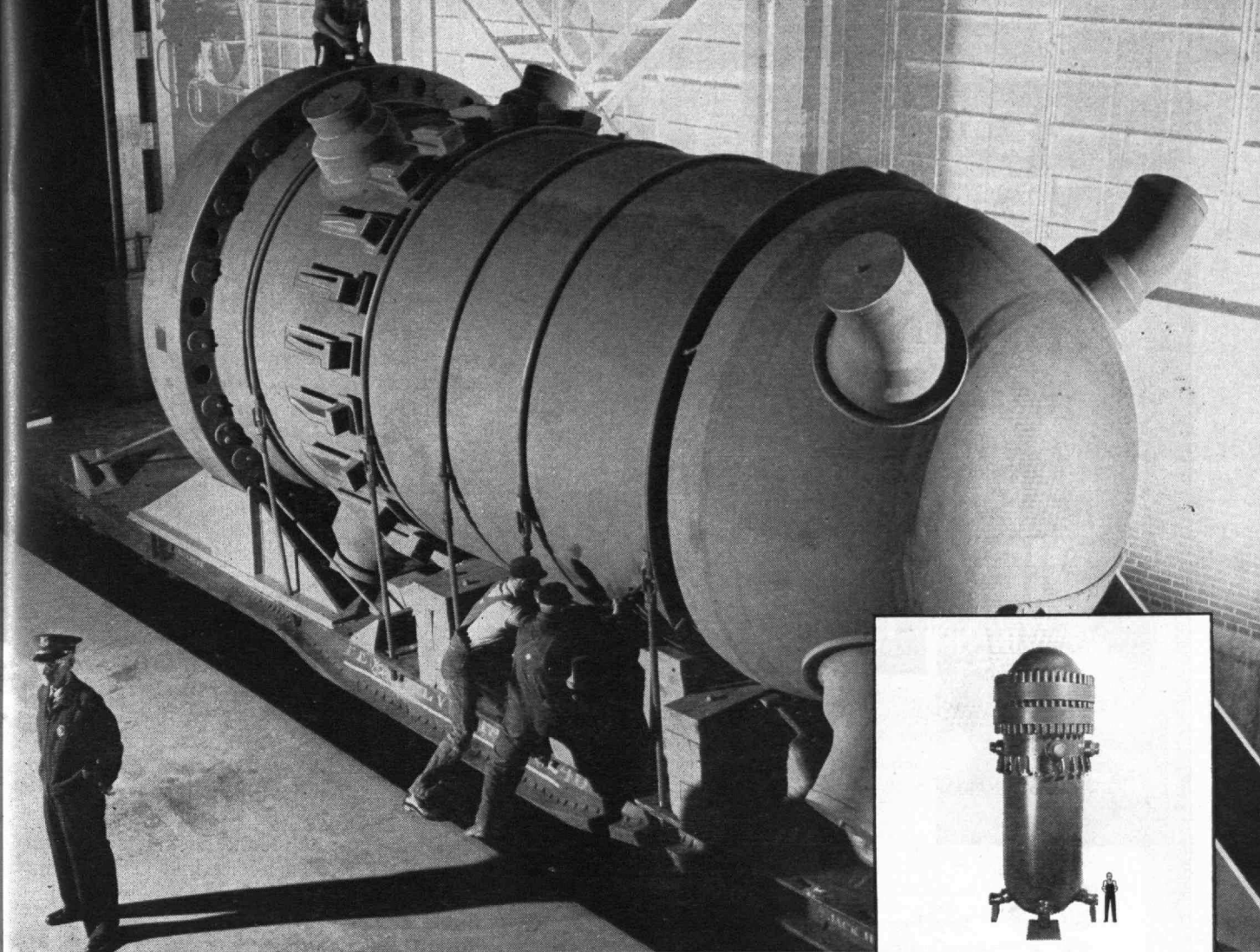
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# C-E delivers the world's heaviest unit of nuclear power equipment

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New machines and new techniques were developed to make possible a manufacturing precision never before achieved in a

unit of this size. The final machining operation required two months on one of the world's largest boring mills. It involved the use of new optical techniques to align matching machined surfaces to the extremely high degree of accuracy specified. C-E's 15-million-volt betatron searched for defects as small as a  $\frac{1}{8}$ -in. length of toothpick in welded joints up to 10 inches thick.

Combustion is actively engaged in many nuclear projects, including the design and manufacture of a complete reactor system for a submarine. Its resources of highly specialized personnel and facilities for nuclear work will enable it to play as important a role in the future use of atomic fuels as it has long played in the generation of power from conventional fuels.

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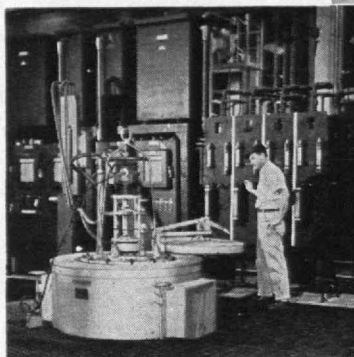
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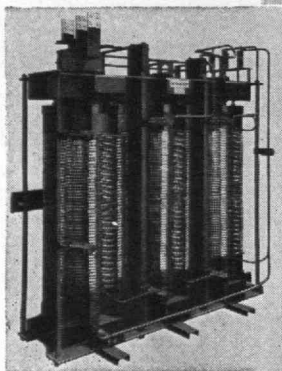


Laboratory

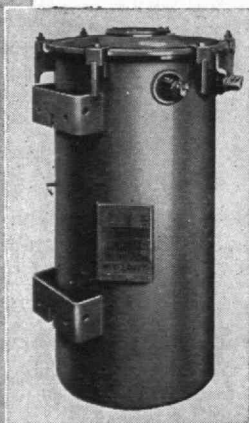
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## ENCOMIUM

(Concluded from page 154)

family's needs, and the cold, impersonal hand of the stranger, or the bureaucrat.

It is individual philanthropy which has provided the great enrichment of our culture. The state, when it turns to such matters, must tailor its program to the general level, to the common denominator. And necessarily, it deals with its problems in a dispassionate and impersonal way. Private individuals, on the other hand, can and do undertake projects which would be impossible, or even improper, for government. Our private educational institutions, our art galleries, our museums, our great symphony orchestras, and many of our libraries have been made possible by large private gifts — gifts not only of money, but of personal enthusiasm and dedication.

As the opportunities for private generosity are gradually worn away, we face, I am afraid, the possibility that our moral and spiritual standards will be subjected to a similar erosion, and that I know will affect both he who gives and he who receives. Certainly there is spiritual satisfaction in giving — in the discharge of an obligation, in sharing with others, in the creative contribution which brings into being something that would not otherwise exist. And for the beneficiary of a generous act there is the precept and example to conduct himself with the same generosity to others. His own expression of charity may not be in the same form or on a commensurate scale, but what he cannot reciprocate in kind he may more than repay in kindness. For the act of charity in any form brings with it an inspiration to do likewise within the limits of our ability.

This is the priceless heritage that we stand to lose. Perhaps, in some fashion, the dollars can be forthcoming. But the character of the individual donor which imparts a far greater purchasing power cannot be found elsewhere, and the impulse to further generosity on the part of the recipient will be gone.

The accomplishments of men like Alfred P. Sloan in their lifetimes and in their memory have created great and lasting benefits far outweighing anything they retained for themselves. It follows that restrictions which limit the individual must inevitably limit the public good. I cannot believe that the people of the United States will agree permanently to suffer so great a loss.

### Stein Presentation

It is my privilege tonight to tender to Mr. Sloan a token of appreciation and recognition. The Silver Stein Award of the M.I.T. Club of New York is given in honor of conspicuous services to the Club, the Institute, or to the public welfare. Mr. Sloan, in the opinion of the responsible committee, qualifies pre-eminently in all three classifications.

The Stein itself is here. It seems, unhappily at the moment, to be empty. There is nothing empty, however, in the honor which it represents, and it is with the greatest of pleasure, Mr. Sloan, that I present you — with the admiration, the esteem, and the affection of all your associates in M.I.T. affairs — the Silver Stein trophy.

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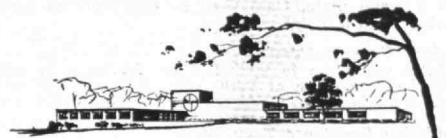
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These 600 volt power and lighting cables for aircraft are designed to operate continuously at a temperature of 200°C. They have unusual resistance to corrosive vapors, acids, solvents and hydraulic fluids. They will not fracture at -80°C of cold and are highly resistant to flame and abrasion.

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Description	Flexible silver plated copper conductor.	Flexible silver plated copper conductor.	Flexible silver plated copper conductor.
Insulation	Teflon tape	Pure teflon—for continuous operation at 400°F, intermittent temperature to 500°F, flexibility as low as -65°F.	Pure teflon—for continuous operation at 400°F or 250 hours at 500°F. Insulation deteriorates at 600°F. Flexible as low as -65°F.
Covering	Saturated fiberglass braid	Silicone varnish, double saturated fiberglass	Double saturated fiberglass impregnated with teflon and heat sealed.
Color	Color coded under shielding.	Light tan standard; or black, red, orange, yellow, green, blue & brown.	Brown standard; or white
Printing	All coverings may be printed with identifying symbols where a large number of circuits are in use.		
Current Rating	Send for detailed tables for current ratings.	Send for detailed tables for current ratings.	Send for detailed tables for current ratings.
Shielding	Either tinned or silver plated copper shielding provides 85% coverage.		

These cables are approved under specification MIL-W-7139A, and their performance exceeds minimum test requirements of the specification listed as follows:

#### Dielectric Test:

After suspension for five hours in 5% salt water solution, sample shall withstand 1000 volts RMS for 5 minutes.

#### Heat Test:

120 hours baking at 500°F followed by water immersion for 20 hours and subjected to the dielectric test.

#### Cold Bend Test:

1 hour at -55°C followed by flexing around a 3" mandrel at this temperature and subjected to the dielectric test.

#### Flammability Test:

The specimen shall not burn after 30 second application of a Bunsen Burner flame. The insulation or outer braid shall not fall from the wire or expose the copper conductor, and shall leave a firm semi-abrasive covering to afford physical separation capable of withstanding a maximum operating voltage of 500 volts RMS when applied between the conductor and a metal plate. Care shall be taken not to bend the specimen while placing it on a metal plate.

#### Surface Creepage Test:

After subjection to 95% RH for 20 hours at 120°F the surface shall withstand a voltage of 1400 volts D.C. on 1 1/4" of the surface with less than .2 milliamperes leakage.

#### Insulation Resistance Test:

After immersion in water for 48 hours the insulation resistance measured on a galvanometer is in excess of 5000 megohms per M ft. with no measurable change between 12 hours and 48 hours.

#### Oil and Solvent Absorption:

Sample is immersed in lubricating oil, gasoline, salt water, ethylene glycol, alcohol, carbontetrachloride and Hydrolube hydraulic oil for a period of 20 hours after which it is subjected to the dielectric test.

#### Capacitance Test:

The capacitance at 1,000 cycles #20 gauge measured 66 mmf/ft. after 24 hours with no measurable change after 48 hours.

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## GRAFT INQUIRY

(Continued from page 158)

### Grafts as Tests

It was previously mentioned that the fact that Ronald and Richard Herrick—the twins who shared Ronald's kidney—were identical rather than fraternal twins was clinched by reciprocal skin grafts. Such swapping of skin as a test of the type of twinning has some general usefulness. As certain degenerative disorders and mental deficiencies are considered to be hereditary, they may be expected to develop in both members of identical twins. Therefore if such a condition appears in one of a pair of twins, it becomes of value to know whether the siblings are identical or fraternal, as a means of forecasting the future of the other member of the pair and taking such preventive measures as are available, if the twins are identical. Reciprocal skin grafting has been applied for this purpose as a means of establishing categorically whether or not a pair of twins are identical or merely fraternal.<sup>7</sup>

A rather startling application of skin grafting as a test is its use to weigh claims of parthenogenesis, or "virgin birth," in the human being. It is established that in fish, fowl, and rabbits the female can reproduce without co-operation of the male. Is "life without father" possible in the human being? This question has recently become a focus of sensational public interest in England. Several newspapers reported medical discussions of the topic and one, the *Sunday Pictorial*, urged women who believed they had experienced this phenomenon to come forward in the interest of science.

The offspring of such a birth would have to be a daughter. A preliminary test of the parthenogenesis claim is determination that mother and daughter have identical blood groups; a final test is successful reciprocal skin grafting. As of mid-1956, one English woman and her daughter had satisfied all of these criteria!

### Future of the Field

Much research is afoot on the subject of grafting of human and other animal tissues. Indeed the field has gained such stature that it now has its own technical journal<sup>8</sup> and has been the subject of weighty scientific conferences.<sup>9</sup> Studies in tissue transplantation range from purely empirical efforts to improve the mechanical techniques of skin grafting, to profound searches into the mechanisms whereby the body rejects or accepts grafts. Thus, in time, these investigations may be hoped not only to advance repair of the human body by transplantation of "spare parts," but also to clarify the body's immunity mechanisms. More knowledge of human immunity mechanisms is urgently needed. Such insight might explain why the human body resists grafts—and perhaps provide means for circumventing this resistance. It might also advance understanding and control of infectious diseases. Perhaps it might even explain why, for a time, cancer may remain quite localized in one human individual whereas in another it spreads like wildfire.

(Concluded on page 168)





# Can you help add to these achievements?

These accomplishments in pure and applied science are widely known. To this impressive list, scientists and engineers at the Laboratory's Livermore site are making equally important contributions in the fields of nuclear weapons design, nuclear rocket propulsion, controlled thermonuclear energy (Project Sherwood) and high current accelerators.

What you can do to help add to these accomplishments is limited only by yourself—your *ability* and your *interest*.

For the University of California Radiation Laboratory is managed and directed by outstanding scientists and engineers.

These men are your "team-mates"... offering pioneering knowledge of the nuclear field and the newest, most expansive laboratory facilities. Here—where new ideas and techniques are traditional—initiative is constantly encouraged and developed.

**I**F YOU are a **MECHANICAL** or **ELECTRONICS ENGINEER**, you may be involved in a project in any one of many interesting fields, as a basic member of the task force assigned each research problem. Your major contribution will be to design and test the necessary equipment, which calls for skill at improvising and the requisite imaginativeness to solve a broad scope of consistently unfamiliar and novel problems.

If you are a **CHEMIST** or **CHEMICAL ENGINEER**, you will work on investigations in radiochemistry, physical and inorganic chemistry and analytical chemistry. The chemical engineer is particularly concerned with the problems of nuclear rocket propulsion, weapons and reactors.

If you are a **PHYSICIST** or **MATHEMATICIAN** you may be involved in such fields of theoretical and experimental physics as weapons design, nuclear rockets, nuclear emulsions, scientific

photography (including work in the new field of shock hydrodynamics), reaction history, critical assembly, nuclear physics, high current linear accelerator research, and the controlled release of thermonuclear energy.

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**Discovery of plutonium  
and many other  
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## REFERENCES

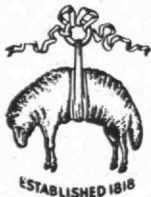
1. "The Unregenerate," *The Technology Review*, 58: 134,135 (January, 1956).
2. Dempster, W. J., "Problems Involved in the Homotransplantation of Tissue, with Particular Reference to the Skin," *British Medical Journal*, 2:1041-1049 (1951).
3. "Ideal By-Product," *The Technology Review*, 50: 23 (November, 1947).
4. "Vigorous Hybrids," *The Technology Review*, 54: 179 (February, 1952).
5. Merrill, J. P., Murray, J. E., Harrison, J. H., and Guild, W. R., "Successful Homotransplantation of the Human Kidney Between Identical Twins," *Journal of the American Medical Association*, 160:277-282, Number 4 (January 28, 1956).
6. Nordsiek, Frederic W., "All Experience Is of Change," *The Technology Review*, 53:89 (December, 1950).
7. Rogers, Blair O., and Allen, Gordon, "Intolerance of Dizygotic Human Twins to Reciprocal Skin Homografts," *Science*, 122:158 (March 17, 1955).
8. *Transplantation Bulletin* (Quarterly - January, April, July, October). Care of Montana Deaconess Hospital, Great Falls, Mont.
9. "Proceedings: Tissue Transplantation Conference," *Journal of the National Cancer Institute*, 14:665-767, Number 3 (December, 1953).

The references given above are intended merely to serve as examples of available medical literature.

in Anne Roe's recent study of the backgrounds of 64 eminent scientists, most of whom, she discovered, did not decide on their vocations until their junior or senior year in college. Presumably these men, who later reached the first rank of the nation's physical and social scientists, explored thoughtfully during most of their undergraduate education. They sought successfully for a field in which they could take a consuming interest. And in that field they became so absorbed that it commanded their talent, their time, and their unceasing work during their adult lives. To these men the freedom to explore during their undergraduate years evidently led to a motivation that is of prime importance to all uncommon men. And it is in achieving such motivation that a synthesis of freedom with discipline must permeate the methods of education.

Good teaching is usually the source of this kind of motivation in students, no matter when the motivation develops. The experience of the research chemist, Robert E. Hulse, can testify to that fact. Dr. Hulse recently attributed his lifelong interest in chemistry to a class in high school. Commenting that as a boy he had no interest in chemistry, he went on to say: "I was in my last year in high school expecting to study civil engineering at Rutgers when I took the regular

(Continued on page 170)



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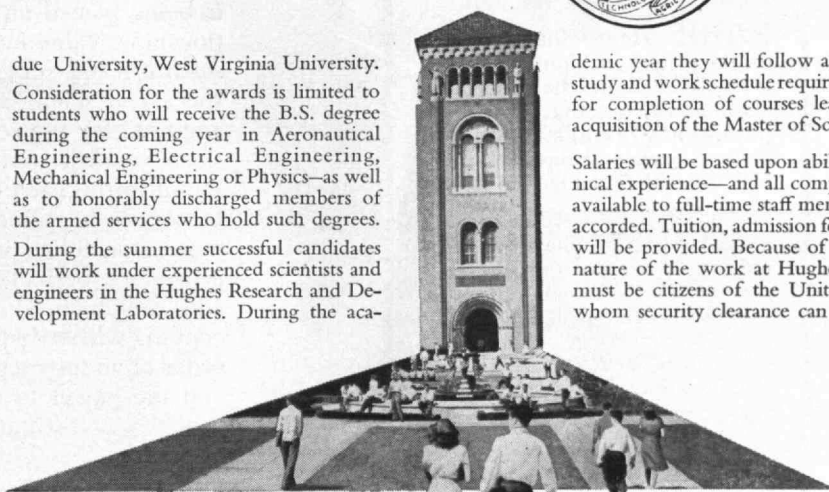
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A CURTIS MAGAZINE

## EDUCATION OF THE UNCOMMON MAN

(Continued from page 168)

high school chemistry course. The teacher we had made it all sound so very interesting that overnight I knew that I wanted to learn more."

Uncommon teaching methods must be devised for the uncommon student, else he emerges from his school and college years unchallenged by the experience. This can have two harmful effects. The gifted student will not have reached his limit of intellectual capacity for absorbing and digesting academic material. In so far as he fails to do this, just so much is society denied the benefits later on of his contribution. The other harmful effect is on the student himself, for he never feels the impact of hard intellectual work. "Coasting" is one of the student phrases used to describe a curriculum too easy for the student who "never has to crack a book" and yet receives passing grades or even honors. Professional life later on inevitably challenges capable people to the last ounce of their intellectual and sometimes their physical strength. Therefore, whatever the subject matter and however large the classes, the college and professional school must be flexible enough to offer assignments and corresponding rewards sufficient to bring out the very best effort of our talented students. Possibly one reason for the ability of the so-called prestige colleges to attract excellent students is that they have reputations of meeting the uncommon student with the challenge he deserves.

The teaching profession in general, whether in engineering, art, or architecture, is now sifting from the curricula the myriad skill courses that have been cluttering up professional education. Today emphasis is being placed on fundamental principles and relationships. Value judgments that were avoided as unscientific and subjective are encouraged, at least in the social sciences, and in the arts. Principles are acquired for the solving of original problems rather than for drill problems, the answers to which are found in the back of the book. Laboratory exercises have been too often a dull experience involving little more than filling in the blank spaces of an orderly procedure perfected years before. Studio exercises and architectural problems formerly consisted of copying with care the preconceived arrangement and order of an instructor. Today, imagination, creativity, and the power to act are the three most important

(Continued on page 172)

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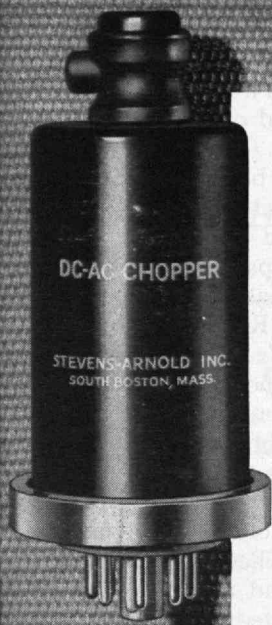
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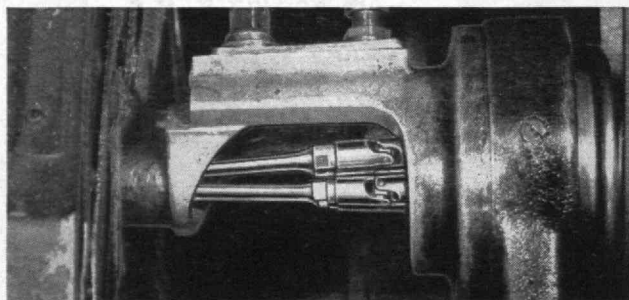
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## EDUCATION OF THE UNCOMMON MAN

(Continued from page 170)

ingredients that will transform a run-of-the-mill educational experience into a real challenge to the capable student.

These ingredients have to be absorbed in terms of student-centered and project-oriented exercises in which intellect, interest, and enthusiasm are demanded to the limit of the capacity of those participating. The project method has meant many things in American education — from Rudolf Weaver's architectural program in the 1920's at the University of Florida to the case book methods of schools of law and business. The organization of source materials, whether from laboratory or library, is left to the student. The text, if any, answers the purpose of anticipating experiences which will be met later on — and not of a decalogue to be memorized or a chart to be followed. Inductive logic is relied upon. Generalizations based on experiment and observation are encouraged. The unity of knowledge, the synthesis of related factors is stressed. The talented student responds joyfully to an academic atmosphere of freedom and accent on self-reliance and resourcefulness. The mediocre student drags his feet, wonders what it is the instructor "wants." At this point the instructor knows, if he didn't know before, who his bright students are and what to do for them. The age-old academic dilemma of slow and fast sections is no dilemma at all, for the choice need not be an either-or-proposition. As a rule, there is no reason why the bright students in a class of mixed talents cannot be intrigued into pursuing the subject matter more thoroughly and more painstakingly than the mediocre student.

All professional education today, regardless of academic level or field of interest, is recognizing the need to offer the men and women who are preparing for professional practice an opportunity for studies in the humanistic and social field that are parallel to the scientific technological core of the professional program.

The American Council of Learned Societies contends that the problem raised by the challenge of the second half of the Twentieth Century "lies in the domain which we call the humanistic and social studies. Unfortunately, high development of the natural, mathematical, and biological sciences has been accompanied by the comparative neglect of these

(Concluded on page 174)

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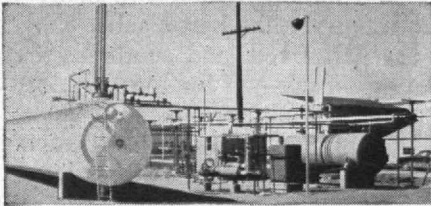
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## EDUCATION OF THE UNCOMMON MAN

(Concluded from page 172)

human studies. To be adequate, higher education must redress this balance. The humanistic social sciences are steadily adjusting themselves to the scientific, social, shrunken and dynamic world of the Twentieth Century. They now include within themselves all human experience, not only that of the Western peoples; they embrace new disciplines and new combinations of old disciplines; and they function as ways toward understanding human behavior, not only as the means to individual spiritual enrichment."

The uncommon student requires an uncommon college teacher — one who will inspire him toward intellectual development and creative endeavor for the rest of his life. This requirement I would put above all others. And although there are many who will argue to the contrary, the best teacher is likely to be one who has performed, and continues to perform, creative work himself — in his teaching, his writing, his research, his consulting.

Elliott Dunlap Smith has this to say about the character of the teacher and of his teaching:

Good teaching can combine discipline with fundamental originality. It can face the student with a genuine perplexity that causes him to escape from stereotypes and to break through routine to fundamental thought. It can cause methods as well as data to cease to be inert; to become flesh and dwell within the student; to be material which he uses and remolds under a vigorous, trained and flexible style that is truly his own. It can make his professional style so fundamental that it strengthens his power in every field, not merely in that of his university study. It can give him confidence to meet the perplexities of this world unabashed as a citizen as well as a professional man. In a word, professional education, by its teachers and by its teaching, should develop capacity for fundamental originality in learning from experience and in meeting the problems that life brings.

That "capacity for fundamental originality," which good teaching can help to instill in the gifted mind, is the essence of creativity — of the creativity that Sir Herbert Read called the only adequate compensation for the conformity and the suppression of individuality which community life requires today. It is a requisite for the uncommon teacher, if the teacher is to help his students to become uncommon men and women.



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—and the prophet replied:

*"It is well to give when asked, but it is  
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The tale is told of Almustafa, the prophet, who, having awaited for many years the ship that would return him to the place from whence he came, was making the final descent to the shore when the folk of Orphalese crowded about him. They besought him before departing to "disclose us to ourselves, and tell us all that has been shown you of that which is between birth and death."

With words of wisdom, an answer appropriate was given to the woman holding a babe, to the ploughman, to the merchant. Begged one, "Speak to us of GIVING," and the prophet replied:

*"It is well to give when asked, but it is better to give unasked, through understanding;*

*And to the open-handed the search for one who shall receive is joy greater than giving. All you have shall some day be given;*

*Therefore give now, that the season of giving may be yours and not your inheritors."*

Through the years the prophet's words have held true, for even today he who "through understanding" includes the MASSACHUSETTS INSTITUTE OF TECHNOLOGY as a beneficiary in his will can experience thereby a two-fold satisfaction. The successful culmination of his search for a worthy recipient and the anticipated results his generosity will assist in accomplishing. These satisfactions give an added value to the span of man's days and project his usefulness to his fellowmen far into the future.

The Massachusetts Institute of Technology because of the high quality of the education given its students, its effective research work for aiding America in peace as well as in war, and the high character of its governing body and academic staff qualifies as an institution for serving our American ideals for the present and in the years to come.

But the search, the finding, and the anticipated accomplishments are not enough; for without the properly-worded record, man's plan for the future may go awry. Hence the prophet's importuning, "—give now," should be heeded. The giving need not be an immediate physical transaction, for written directions replace the spoken word when the speaker is no longer present, and a donor can frequently make by will a gift which is larger than he can make while living. Truly, *"it is well to give when asked, but it is better to give unasked, through understanding."*

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\* "The Prophet" by Kahlil Gibran



# ALUMNI AND OFFICERS IN THE NEWS

## New Posts . . .

In addition to the 17 Alumni promotions recorded on page 142, other Alumni recently advanced to new posts are enumerated below:

RICHARD S. CHATFIELD'22, to manager of the Construction Division, City Mortgage Department, Equitable Life Assurance Society . . . JOHN HENNESSY'24, to lay trustee of Iona College.

MARSHALL N. WATERMAN'24, to commercial engineering manager of Westinghouse Lamp Division, Westinghouse Electric Corporation . . . PAUL L. SACKETT'27, to Boston area branch manager of the Industrial Division, York Corporation.

VINCENT K. ULRICH'35, to head of applications engineering of the Receiving Tube Division, Raytheon Manufacturing Company . . . DRAVEAUX W. BENDER'33, to assistant to the city manager in charge of urban renewal, Cambridge, Mass. . . BENJAMIN PARRAN'43, to project leader in the Technical Military Planning Operation, General Electric Company.

By the Bell Aircraft Corporation: GEORGE D. RAY'36, to chief engineer of the newly formed Aircraft Division; JOHN F. STRICKLER, JR.'32, and JOHN H. VAN LONKHUYZEN'46, as managers, respectively, of the Research and Avionics Divisions of the new Weapon Systems Division.

## Obituary

HOWARD G. NOBLE'86, November 9, 1956  
HERBERT S. KIMBALL'91, October 20, 1956  
C. HANCOCK WOOD'91, August 24, 1956  
FRANK G. ASHTON'93, June 4, 1956\*  
CECIL E. PAINE'93, July 1, 1956\*  
ARTHUR J. FARNSWORTH'94, October 8, 1956  
BEN EDWIN HOLDEN'94, May 7, 1956\*  
WALTER A. HALL'95, September 19, 1956\*  
CLARENCE C. CULVER'96, April 24, 1956\*  
WILLIAM H. McALPINE'96, November 1, 1956\*  
LESTER D. GARDNER'98, November 23, 1956  
VAN R. LANSINGH'98, November 16, 1956  
WILL R. PARKER'99, October 24, 1956\*  
ANNA B. GALLUP'01, October 21, 1956\*  
ARTHUR W. PAYNE'01, February 5, 1956\*  
RALPH S. FRANKLIN'02, October 24, 1956\*  
EDWARD J. RUXTON'03, November 6, 1956\*  
WILLIAM H. WHITCOMB'03, August 9, 1956\*  
JOHN H. FOSTER'04, date not stated\*  
HENRY S. SHERMAN'04, October 28, 1956\*  
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PAUL S. SCHMIDT'06, July 6, 1956  
DE WITT M. TAYLOR'06, November 13, 1956  
THOMAS C. KEELING, Sr., '07, October 12, 1956\*

HORACE E. ALLEN'08, September 28, 1956\*  
CLEMENT J. DORE'08, November 20, 1956  
RICHARD Y. KENNARD'08, December, 1955\*  
HENRY F. MILLER'10, September 29, 1956  
NATHAN RANSOHOFF'10, September 25, 1956  
CLARENCE McDONOUGH'12, September 19, 1956\*  
WILLIAM A. READY'13, November 20, 1956  
THOMAS J. RICE'13, June 22, 1956\*  
JOHN SOKOLOFF'14, May 2, 1955\*  
JACK HEPINSTALL'16, April 27, 1956\*  
WILLIAM D. MAIER'16, May, 1956  
HERBERT L. BONE'17, October 24, 1956  
FREDERICK H. BUTTERFIELD'17, date unknown  
NEWMAN M. MARSILIUS, Sr., '17, October 17, 1956\*  
DWIGHT P. SPENCER'18, September 24, 1956  
GRANT K. FRENCH'20, October 26, 1956\*  
ANDREW C. JENSEN, Jr., '21, September 22, 1956  
DONALD S. PISTON'21, September 30, 1956\*  
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E. WAYNE REMBERT'25, October 21, 1956\*  
THATCHER H. MAWSON'27, June 29, 1956\*  
RICHARD M. McCUSKER'29, October, 1956  
FRANK W. SPEIR'32, July, 1956  
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GILBERT E. KLEIN'47, August 20, 1956\*  
CLIFFORD S. ABRAHAMSON'50, August 16, 1955\*  
JOHN P. MARKUSH'50, April 15, 1956\*

\* Further information in Class Notes

† Also in 1906 notes

† In Club of W. Pennsylvania notes

## Chemical Abstracts . . .

At the dedication of the new Research Laboratories of the J. T. Baker Chemical Company, of which Joseph R. Stevens'30 is executive vice-president, Professor Arthur C. Cope, head of the Institute's Department of Chemistry, pointed out that successful research is based on knowledge of previous advances. Thus, he said, an adequate program for publication of research findings is essential to assure progress.

In describing the various publications that record research, he defined the three categories of serial publications: (1) the fundamental journals, or basic science journals, (2) the applied journals, and (3)

*Chemical Abstracts* and other publications of the Chemical Abstract Service.

In outlining the development of some of the publications of the American Chemical Society, he noted that there are many problems arising from the tremendous growth in research activity.

In the field of fundamental reporting, the Society now publishes the *Journal of Physical Chemistry* and the *Journal of Organic Chemistry* to do justice to the large amount of original and valuable research work that must be reported. He prophesied that more "vertical interest" journals will have to be added to relieve the pressure for space. Possibilities include biochemistry, inorganic and nuclear chemistry, and medicinal chemistry. Since little advertising is carried in these fundamental journals, the Society must enforce rigid editorial policies and publish economically in order to stay within budget limitations.

He paid special tribute to *Chemical Abstracts*, terming it the best known, most highly regarded, and most frequently used abstract publication serving the field of chemistry. Its thoroughness and accurate indexing extend its field of influence into all the sciences that border chemistry. He pointed out that it is really a unique abstracting service, reporting original research regardless of origin or language of publication. Its counterparts in other countries have changed or ceased to exist, so *Chemical Abstracts* has a world-wide function.

The high editorial standards and comprehensive coverage of *Chemical Abstracts* must be maintained, yet they necessarily make it an expensive undertaking. Even though there is much dedicated and devoted service to it, proper financial support has been a problem.

Its recent amazing growth is indicated by the fact that the number of articles abstracted increased nearly threefold from 1948 to 1954, and production costs have risen from \$450,000 to \$1,250,000 during this same period. At the present annual rate of growth of ten per cent, the publication may cost \$2,000,000 by 1960.

Until this year, Corporation Associates have made up its annual deficits, but in 1956, *Chemical Abstracts* initiated a unique system of charging \$350 for multiple-use subscriptions, \$80 for educational subscriptions, and only \$20 for individual subscriptions for personal use. It is an honor system on a large scale, and it is working, since, as Professor Cope stated, *Chemical Abstracts*, which had a deficit of a half million in 1955, will break even for 1956.

The ten-year index now in preparation will cost \$2,000,000, and there is no current solution to the problem of producing and pricing it within the ability of many university libraries to pay for it. Dr. Cope feels that the next cumulative index may cover a period of only five years. He feels that electrical or mechanical recalling devices may be the eventual answer to the indexing problem.

# NEWS FROM THE CLUBS AND CLASSES

## CLUB NOTES

### Boston Luncheon

The second meeting of the M.I.T. Boston Luncheon Club was held at the Union Oyster House on November 15, 1956. Professor Erwin H. Schell spoke on "The Challenge of Increasing Change." Professor Schell's talk covered these thoughts: Change is nothing new, but today's change has been constantly accelerating and probably will continue to do so. One of the chief stimuli of this phenomenon has been the development of military science and its requirements. This is true because of the lack of commercial restraint in this field. Also aiding this increasing change has been the willingness and eagerness of the people to accept the change. This characteristic is different from the old-fashioned concept that changes were "new fangled gadgets" not to be trusted.

The current pressure on all businesses is to study and continue progressive modifications in order to stay competitive in the market. Today's stockholders in business seem to be less interested in current dividend returns and more interested in growth, as exemplified by new and diversified products. A new business weapon in competition is time; the ability to stay ahead of the competition in marketing new products. Supplementing this new business approach is the development of the technique of research and development. Millions of dollars are now being spent in this direction. Organization of various scientific skills, working in teamwork on projects, has greatly increased the output of change as a result of research and development. Improvement now seems to be necessary, an element in survival. Improvement takes two forms; squeezing out waste, and capitalizing on new products or methods. The new procedures depend greatly on creative ability in the personnel involved in research and development. The atmosphere of justness seems to stimulate the creativeness in people.

Because of the increased pace of change, a new emphasis is being placed on long-range planning and perceptiveness. Necessary for this is a procedure whereby top management gets data and facts very quickly, so that problems can be seen in their early stage, in time for correction. There is an increasing emphasis on adaptability and versatility in our daily life, and also in our business and production. There is a problem of relating the distant future to the middle future, and, in turn, to the present in terms that allow for efficient management. In conclusion, as the pace of progress heightens, continued improvement will become common, creative talents will become more important, high perceptivity more in de-

mand, and versatility and adaptability more the norm. — C. VINCENT VAPPI, *Secretary*, 240 Sydney Street, Cambridge, Mass.

### Central New York

Our new officers for the 1956-1957 season are Bill Schuler'32, president; Dewey Sandell'49, vice-president; and Greg Gebert'50, secretary-treasurer.

Our first meeting of the season was held on September 25 at the University Club, Syracuse. We had as guest speaker Mr. Carl Steinhagen of the Heavy Military Electronic Equipment Department of the General Electric Company. His topic was "Missiles; Their Guidance and Control." Mr. Steinhagen, a graduate of the United States Military Academy, has had extensive military experience with guided missiles, having been for three years the chief of the Research and Analysis Section of the Guided Missiles School, Fort Bliss, Texas. With the aid of slides and models, Mr. Steinhagen presented a lucid description of the general principles involved in the choice of the several systems of guidance and control of missiles. The meeting was marked by lively interest, as evidenced by numerous questions from the floor, both during the talk and during the discussion period following.

We have an active program planned for the season, the details of which have been sent to all members on the mailing list. All Alumni living within the Syracuse area who haven't been contacted are asked to drop me a line and get on the mailing list. — GREGORY G. GEBERT, *Secretary*, 33 Trelign Drive, North Syracuse, N. Y.

### Chicago

The Club, under the presidency of Dwight K. Taylor'26, got its fall program off with a swish by having a boat trip down the Chicago River, Chicago Sanitary Canal, and Calumet Sag Channel. Approximately 100 members were favored with excellent weather, and the perfect arrangements by Edgar "Dutch" Seifert '19. With plenty of refreshments, coffee and rolls, and a box lunch aboard, the members combined a good open air outing with a view from the water side of industrial Chicago. The rapid growth in port facilities, spurred by the approaching completion of the St. Lawrence Seaway, was plainly evident. It was a graphic means of impressing all of us of the tremendous increase in business, and the far-reaching effects that will result from Chicago becoming an ocean port.

November 15 featured a dinner and speaker, along with good fellowship. The Club heard Leonard E. Read, of the Foundation for Economic Education, talk on the positive approach to combat socialism. We were very grateful to Mr. Read for an excellent talk.

Plans are well under way for the Alumni Regional Conference, on February 16, 1957. More details will be announced later. — JACK C. PAGE, *Secretary*, Abrading Systems Company, 7354 N. Clark Street, Chicago 26, Ill.

### Fairfield County Bridgeport

Election of officers took place at a dinner meeting held by the M.I.T. Club of Fairfield County (Conn.) on November 15, 1956, at the Clam Box in Westport. A slate of officers was presented by Clarence S. Lyon'46, chairman of the nominating committee, and the following were elected: T. Bailey Curran'29, President; Aaron White'39, Vice-president; C. Philip Epifano'39, Treasurer; and Anthony Savina'30, Secretary.

Retiring-President, Gilbert C. Mott'37, presided and introduced the speaker, C. Richard Soderberg, Dean of Engineering at M.I.T. The 35 Alumni present heard a highly interesting and enlightening talk on the general topic of engineering education. Dean Soderberg discussed many of the problems facing engineering schools and outlined some of the trends at M.I.T. to meet the increasing demands for engineering education and to provide training of the highest professional quality. The talk was followed by a very active question period, which finally had to be terminated to allow Dean Soderberg to start back for Boston at a reasonable hour.

Alumni living in the Fairfield County area are urged to watch for notices of future meetings and make plans to attend. — ANTHONY R. SAVINA, *Secretary*, 79 Ledge Lane, Stamford, Conn.

### Kanawha Valley

Dr. James R. Killian, Jr., visited Charleston, W. Va., Thursday, November 8, and was entertained by the M.I.T. Club of the Kanawha Valley at a reception at the Berry Hills Country Club attended by Club members and wives. Later that evening he addressed a joint dinner meeting of the M.I.T. Club and the Charleston Chapter of the West Virginia Society of Professional Engineers in the main ballroom of the Daniel Boone Hotel. Wives were again in attendance. Dr. Killian was introduced by D. G. Hulett'42, President of the Club. The speaker's topic was "Technology Shapes Our Future."

The next morning, the Club Executive Committee and the Charleston Educational Counsellors were hosts for Dr. Killian at a breakfast in the Daniel Boone Hotel. Later that day he spoke to the regular weekly meeting of the Charleston Rotary Club, where he was introduced by Howard P. McJunkin'43. His subject was "Educational Responsibilities in the World of Tomorrow." — DANIEL G. HULETT, *President*, M.I.T. Club of the Kanawha Valley, 513 Maefair Drive, Charleston 4, W. Va.

## Kansas City

Although it may not sound very up to date, Kansas City saw the first meeting in ten years of the M.I.T. Club on November 9. Alumni and guests gathered at the University Club for a fine dinner and a delightful program. We can't say it was a matter of renewing old acquaintances. Most of us had never met before. It was fine for each of us to learn that there were so many enthusiastic and likeable graduates of M.I.T. in the area.

Mr. H. G. Bouscaren of Chicago was our speaker. We in Kansas City are sincerely envious of the M.I.T. Club of Chicago. After Mr. Bouscaren had agreed to be present, Warren Evans, our program chairman, wrote to find out the topic of his talk. Mr. Bouscaren replied that we could pick any subject we liked. He would guarantee that he would not stick to it for more than two or three minutes. In our meeting notices, the talk was entitled "Engineering, Science, and the Art of Living." We were engrossed and thoroughly entertained by the many directions our speaker took in trying to escape from under this umbrella-like topic. We enjoyed the gastronomic and geographic sidelines of his recent trip to Europe. We were attentive to his experiences in building up the M.I.T. Club of Chicago, and welcomed his comments on the 1951 flood in Kansas City, and the business ramifications thereof. His recollection of his student days at M.I.T. were fun, and his career advice to M.I.T. graduates was serious and appreciated. It was a distinct and appreciated honor for all of us to have known him for one evening.

We also enjoyed the viewing of the SAGE movie, showing the Lincoln Laboratory's contribution to our air defense network. We were particularly fortunate in having Fred Lehmann to comment on the movie and answer questions afterward. The Alumni attending were: John Brown, Robert Cadieu, Bernard Duffy, Fredric Ehrlich, Warren Evans (our program chairman and vice-president), Bart Hakan, Bob Hutton, Jim Irwin, Betty and Fred Lehmann, F. H. Littrell of Omaha, John Murphy, Dick Muther (our president), Norman O'Shea, John Riddell, and Ed Weatherly. — B. J. DUFFY, *Secretary*, 5621 Tahoe Lane, Kansas City 3, Kansas.

## New York

On November 14, 1956, more than 300 members and guests of the M.I.T. Club of New York attended the annual dinner at the Biltmore Hotel. A feature of the program was the presentation of the Silver Stein to Alfred P. Sloan, Jr., for his inspiring leadership and devotion on behalf of M.I.T. The presentation was made by Crawford E. Greenewalt, president of E. I. duPont de Nemours. Dr. James R. Killian, Jr., presented an excellent talk on "Scientific and Engineering Manpower." The Club was happy to have among its guests, Dean Lobdell and his wife. The cocktail party and the dinner were a huge success. The entertainment, a singer, Gillian Gray, and a guitarist, Ginny Mayhew, provided by John Teeter '22, helped make the function a pleasant one for the ladies. The Club provided dancing in the

Bowman Room to Russ Morgan's Music, and many of the Club members remained until the wee hours of the morning.

The Classes of 1935, 1950, and 1952 have held reunions in our Club quarters, and the Class of '19 plans to hold its reunion here also in the very near future. Facilities of the Club provide an excellent means for classmates to get together, either informally or for dinner, and so forth. Club quarters have been expanded and it is now possible for members to arrange for a small private dining room in which they can hold special functions.

A reunion of the former students of Lawrence Chapman, who taught the now-discontinued course, 13T, Ship Operations, was held at the Club on November 15. Of the 80 pupils who had been enrolled in the course, 30 men, from all parts of the country, came together to greet Mr. Chapman.

On November 8, 45 members of the M.I.T. Alumni Association of Long Island attended a dinner and tour of the United Airlines maintenance hangar at Idlewild Airport. The event was organized by a committee headed by Dixon Speas '40, with the assistance of Dick Steuer '46. After a delicious dinner, served in a United Airlines hangar, Mr. Owen Hunsaker and Mr. Dick Johnson, of the Sales Promotion Department, escorted the group on a tour of the hangar, where several DC7 aircraft were inspected. The tour continued through the United Airlines dispatch center and briefing room for airline crews. The meeting concluded with a color film on Hawaii, featuring advantages of Hawaii as a vacation spot. The tour of the United Airlines facilities impressed everyone with the scope of activities used to run a large airline. The care and thoroughness used in maintaining airplanes was most reassuring to those of the group who travel by air.

The plans for the November 8 affair of the Westchester section, which had been scheduled as a stag dinner, were changed to include wives. There were approximately 85 people who attended this party at the Scarsdale Country Club. We wish to thank A. L. Perlman, our guest speaker, who helped make the evening so enjoyable.

The Westchester Alumni Association is planning to hold a dinner at the Scarsdale Country Club on January 17. The guest speaker will be Mr. John Burchard, Dean of Humanities and Social Studies. — HARVEY KRAM, *Secretary*, 101 Barnyard Lane, Roslyn Heights, L.I., N.Y.

## Rochester

The second meeting of our Club was a dinner followed by a trip through the plant of the Consolidated Machine Tool Company. This company, a division of Farrel-Birmingham, manufactures special types of large machinery for such industries as automotive, oil, sugar and rubber. The trip was extremely interesting, and all participating were amazed by the immense size of the machines being constructed. We were treated to seeing what is probably one of the largest lathes ever built and one of the largest hydraulic stamping presses manufactured.

The Education Council has been very

active. Professor Holt Ashley, from the Department of Aeronautics at the Institute, was in Rochester from November 13 to 16 to visit our area high schools and speak to students on the fields of science and engineering. Professor Ashley visited 12 high schools during his stay here, and his visits were of great assistance to our counseling activities in the area. In addition to the school visits, a "Parent-Student" night was held to acquaint both parents and students concerning science and engineering as a profession, and M.I.T.'s role in educating students for these professions. Professor Ashley spoke to the group, and there were slides of the Institute, plus the movie "Men of Science."

Our next Club meeting will be on December 27, and is our annual Christmas luncheon to which students now attending M.I.T. who live in the Rochester area are invited as guests of the Club. We hope once again to have Professor A. A. Ashdown join us for this occasion as he has for many years in the past.

Plans are already in progress, under the direction of President V. N. Hansford '37, for the visit of President Killian to Rochester on February 18. A gala ladies' night will highlight the program in honor of President Killian. — JAMES K. LITZWITZ, *Secretary*, 191 Rogers Parkway, Rochester 17, N. Y.

## Schenectady

The first meeting of the Club for the 1956-1957 season was a very successful Steaknig Outing at popular Thatcher Park in the Helderberg mountains west of Albany, N.Y., on September 9. M.I.T. Club members and their families enjoyed the opportunity to get acquainted and renew old friendships. The charcoal-broiled steaks topped a full menu, with games, sports and, of course, drinks to provide fun and relaxation for all. This annual affair has become one of the most popular meetings of the year.

Our first regularly scheduled monthly luncheon meeting was held at the Edison Club Annex on October 9. Mr. William T. Townsend, registered representative of the Spencer Trask Investment Company, gave an entertaining and enlightening talk on investment securities. He covered the broad field with an active question and answer period participated in by members and their guests.

The Club was honored recently by the nomination of one of its members, John H. Hollomon '40, as an Alumni Member on the M.I.T. Corporation Visiting Committee for the Department of Metallurgy. The purpose of this committee is to give the department the benefit of advice and opinions of an interested group other than those actually connected with the M.I.T. Faculty or Administration. Dr. Hollomon is associated with the General Electric Research Laboratory located at the Knolls in Schenectady, N. Y.

The second of our regularly scheduled luncheon meetings was held at the Edison Club Annex on Tuesday, November 13. Mr. Albert Zink, manager of programming for all of General Electric Company radio and television stations, gave the Club members and their guests an insight



into the technical planning which goes into making up the behind-the-scenes effort. He also described the highly competitive situation that exists in this field.

The Club had plans for a talk by Dr. George W. Graham of the Ellis Hospital Staff at its December 11 luncheon meeting. Many of the Club members have recently contributed to a fund for the construction of a new wing. Dr. Graham was expected to tell us about hospital administration with particular emphasis on the new wing developments.

Not all plans are complete for the winter and spring schedule. However, there will be a full schedule with interesting and entertaining speakers to aid in broadening the knowledge of all members. We always look for new members at these meetings, so if you are in the vicinity of Schenectady, be sure to join us. All Alumni are cordially invited to be our guests at these regular meetings whenever they are in the area. — E. R. BARRIERE, *Secretary*, 211 First Street, Scotia, N.Y.

## Southern California

On November 9, 1956, the M.I.T. Club of Southern California held its regular monthly dinner meeting at the Rodger Young Auditorium in Los Angeles. At this meeting, the second program of the Club's International Geophysical Year series was presented. (The first, presented last month, was an excellent introduction to I.G.Y. by Dr. Hildegard Kallman.)

The fascinating talk on Project Vanguard was presented by Dr. William H. Pickering, director of the Jet Propulsion Laboratory at the California Institute of Technology. Dr. Pickering is a member of the United States National Committee Technical Panel on the Earth Satellite Program. Dr. Pickering discussed how the earth satellite would be launched, carried to its altitude, and then given its final acceleration from which it will establish its orbit. He explained the technical formulas involved, discussed what scientific observations can be made and what possible significance they might have. A thought-provoking question and answer session followed.

A very interesting post card from Bob Welles'15, who is touring the Mediterranean, was received from Cairo. Toward the end of his visit there he was warned to keep off the streets. It seems the Arabs cannot tell the difference between an American and an Englishman by looking at them. His next card, from Rome, explained how he left Alexandria on a blacked-out ship just before the bombing. Both cards were read at the meeting.

The Club's annual meeting will be held at the University Club in Los Angeles on January 17, 1957. Commander Norville, of Admiral Byrd's South Polar Expedition fame, will speak on the International Geophysical Year.

Members present at this meeting were: John M. Andreas'37, Lloyd L. Balsom'44, Robert H. Boden'34, George M. Cunningham'27, Homer S. Davis'24, Robert W. Davis'50, H. L. Fleming'01, W. K. Geist'50, Justin Gershuny'53, Clifford Heselton'52, Robert E. Hiller'31, Jack W. Horner'41, Andrew F. Kay'40, Jack P. Kourkene'48, Gary Loomis'44, W. C. Lynch'12,

John Maris'54, Arnold W. Martin'44, William R. Mason'41, Charles Morton'46, Brooks Morgan'35, Robert Nicolait'44, R. J. O'Donnell'46, John M. Osborn'25, Harvey S. Pardee'09, Frank E. Reeves'24, J. W. Reis'19, Leslie Reynolds'55, Philip Robinson'26, Albert J. Romano'50, Oliver K. Smith'40, Harry C. Stephens'20, R. B. Stringfield'15, Mr. Stone'51, Charles M. Walker'49, R. D. Webb'51, John L. Whelan, Jr.'42, Herbert White'44, John Wittels'47, Ray Wyland'42, Jay Zeamer'40, H. A. Zwemer'47, Bernard Helfand'43. — JAY ZEAMER, *Secretary*, 8109 Creighton Avenue, Los Angeles 45, Calif.

## Western Pennsylvania

### Pittsburgh

Between meetings of our Club, we have two news items to give you; one bad and one good. We regret having to announce the death of Alex Wishnew'21, who died in Wheeling, W. Va., on September 27, 1955.

Our more pleasant news consists of the fact that Club member John Lawrence'32 has been nominated an Alumni Member on the M.I.T. Corporation Visiting Committee for the Department of Chemical Engineering. — STANLEY KASPER, *Secretary*, 625 Morrison Drive, Pittsburgh 16, Pa.

## CLASS NOTES

### 1890

Our secretary, George A. Packard of Wakefield, found last winter in Massachusetts so trying to his health and that of his wife, that they have decided to spend this winter in Florida, and are now on their way there. They will be at 555 Huntington Avenue, Winter Park, Fla. (Sounds like a Boston address, but really is Florida.) That means that I shall be acting as secretary during his absence. Please send material for class notes to me until they return. I had just got this written when the November Review came, with his note that only two members of '90 attended the June Alumni Day exercises, but he did not mention who; they were Packard himself and Bartlett. I was not there, and have not attended at M.I.T. for seven or eight years; travel and being up late do not agree with me.

George left for my attention a news release from Union College, announcing that a scholarship had been established at Union in honor of our Dr. Willis R. Whitney, by a local physician, Dr. Peter Sykowski. Whitney was the first director of the General Electric Research Laboratory, in which position he continued until his retirement some years ago. After graduation at M.I.T., he had studied in Germany, receiving the degrees of Ph.D. at Leipzig in 1896, and then returned to M.I.T. as an instructor, leaving in 1900 to go to General Electric. He had been awarded honorary degrees: Sc.D. by Union College, 1919; Ch.D., University of Pitts-

burgh, 1919; Sc.D., Syracuse, 1926; Sc.D., University of Michigan, 1927; and LL.D., Lehigh, 1929. He had been awarded many medals for his scientific accomplishments. He was a member of various scientific societies (including the American Chemical Society, of which he was president in 1910), and he became a member of the Board of Trustees of Union College in 1919, and is now a Trustee Emeritus. Who among us can show such a record? — CHARLES W. SHERMAN, *Assistant Secretary*, 16 Myrtle Street, Belmont 78, Mass.

### 1891

Here follows the story from a local newspaper of the death of Herbert Kimball in Redondo Beach, Calif.: "Herbert Sawyer Kimball, for six years treasurer of Christ Church in Redondo Beach, died Saturday, October 20, at his home on 729 S. Broadway Street. Born August 7, 1869, in Lunenburg, Mass., Mr. Kimball spent most of his life in Boston, where he conducted a chemical engineering business. He was captain in a nitrate division of the Ordnance Department, stationed in Washington, D.C., during World War I. He and his wife, Florence, came to Redondo in 1936. In addition to Mrs. Kimball, he is survived by a daughter, Mrs. Nancy K. Fowle; grandson, Roger K. Stone of Marblehead, Mass.; sisters, Mrs. Evelyn Richmond of Santa Barbara, and Mrs. Wilfred G. Cole of Cambridge, Mass.; and a brother, Richard D. of Harvard, Mass."

The following quotations are from an excellent long letter Herbert wrote me on April 11, 1956. This letter was a lovely and affectionate greeting to me personally, and a hail and farewell to the living members of the M.I.T. Class of 1891: "Only recently I read what our former secretary [Gorham Dana] had written in The Review about Brook Farm, and I sent my copy to my brother Richard, and his wife, who live on the Boxborough Road leading to Harvard, Mass. They agreed with me that he had written an excellent account.

"As the years pass, I find my 87th year begins to make trouble in one way or another; but there is nothing like a good afternoon nap to restore one to enjoy a good dinner. So with best wishes for all — As ever, Herbert S. Kimball."

The following letters are from Mrs. Kimball: "As Herbert is no longer able to write letters, he has asked me to tell you that Gorham Dana and Henry Fiske collaborated in writing a book on Fire Prevention or Protection. They were good friends of his, and I'm quite sure he worked for the Eastern Fire Protection Company in Providence for awhile. Herbert has been in failing health for over four years when he lost the sight of his left eye because of a cataract. The right eye has been gradually afflicted so that he can now see with the aid of a reading glass, to read only a short time. His hearing is very poor, and he is in an advanced stage of Bright's disease. He suffers no pain but grows increasingly weaker. Under the circumstances, I thought I would write you a few vital statistics in case you needed them to meet a deadline for the fall issue of The Review.

"Herbert Sawyer Kimball was born in Lunenburg, Mass., on August 7, 1869. (He celebrated his 87th birthday very quietly just a week ago today.) He lived in Roxbury, Jamaica Plain, and Waban (for about 30 years) before retiring from business and coming to Redondo Beach, Calif., where we have lived for 20 years. Herbert was one of ten men to graduate in the first class in chemical engineering offered by M.I.T. Three others, George Holmes, Henry Fiske, and Will Wilder were special friends of his as long as they lived. Herbert conducted his own chemical engineering business in Boston for 40 years. All of these three men, other classmates, and older Tech men employed him. During World War I, he was a captain in the Nitrate Division of the Ordnance Department, stationed in Washington, D.C. He was a life member of the American Society of Civil Engineers. Herbert was treasurer of Christ Episcopal Church for six years. Funeral services will be held there and interment will be in the family lot at Mt. Auburn, Cambridge.

"I feel I am being premature in sending you this information but it's like a will; it doesn't kill you to make one. I think the Class of '91 is very fortunate in having you take over the office of secretary. Now we are about to have lunch out on our nice sunny piazza. Cordially yours, Florence P. Kimball."

In a later letter, Mrs. Kimball said: "According to my promise, I am writing to tell you of the death of my dear husband, Herbert. This occurred on October 20 and brought his long life to an end. He had really been in failing health for 5½ years, and his passing was a blessed relief from weakness, failing eyesight, and hearing.

"You asked my name and girlhood home. I was Florence M. Phillips, and we were married in my father's home in West Somerville, Mass., on June 7, 1905. I am a product of Somerville schools and Mount Holyoke College, where I graduated in 1901. Sincerely yours, Florence P. Kimball." — WILLIAM CHANNING BROWN, *Secretary*, 15 Forest Avenue, Hastings-on-Hudson, N.Y.

## 1893

Since reporting the death of Cecil E. Paine in Bath, Maine, in the November issue of *The Review*, we have received a clipping from the *Portland Express*. He is survived by his wife, Mrs. Jane Barrows Spinney Paine of Bath; one son, Philip Paine of Marblehead, Mass.; two daughters, Mrs. Virginia Smythe, Marblehead, and Mrs. Mary Rolph King, Ontario; a sister, Mrs. Elzada Paine of Boston; and three grandchildren.

A letter has been received from Mrs. Frank G. Ashton of Tenafly, N.J., advising that her husband passed away on June 4, after an illness of four years. Mrs. Ashton wrote that her husband would have appreciated the picture of the 1956 reunion, and said that it would have brought fond memories of his Class. — GEORGE B. GLIDDEN, *Secretary*, 99 Chauncy Street, Boston 11, Mass.; GERTRUDE B. CURRIE, *Assistant Secretary*, Fay, Spofford and Thorndike, Inc., 11 Beacon Street, Boston 8, Mass.

Last month's notes carried the announcement of Norwin Bean's retirement as treasurer of the Manchester Savings Bank after nearly 30 years of service. Mention should have been made of his many other services to the community which have also been notable. "As with most outstanding bankers, Mr. Bean has devoted much of his time to civic, charitable, and corporate interests. He has served for many years as president of Amoskeag Industries, Inc., as director of the Public Service Company of New Hampshire and the New Hampshire Fire Insurance Company. He is president of the Manchester Gas Company and chairman of the board of the Manchester National Bank. His reputation as supporter and benefactor, in time and gifts, to the Manchester Community Chest, Camp Carpenter (Boy Scouts of America), Manchester Institute of Arts and Sciences, Manchester Boys' Club, and others, has been outstanding. He has served on numerous committees of the National Association of Mutual Savings Banks, and he is currently state chairman of the U.S. Treasury Advisory Committee for Savings Bonds."

The secretary learned a few days after his notes had been sent that Norwin and his wife recently celebrated their 55th wedding anniversary in October, and this is certainly an event on which all his classmates would congratulate them most heartily, and extend best wishes for future years. Both Norwin and his charming wife have added much to the enjoyment of our five-year reunions in days gone by, as all who have attended these gatherings will remember. Along with the news of this happy anniversary came the disconcerting news that Norwin had developed a "tired heart" that necessitated a lay-off from physical activity for a time at their summer home in Amherst, N.H. It is now most gratifying to report that he is making a good recovery and will soon be returning to their Manchester home at 63 Carpenter Street. Congratulations on this, Norwin and, incidentally, also on your 83rd birthday on November 4. You are one of the youngsters of the Class, and we wish you as many more happy anniversaries as you may desire.

Almost at the time of learning about Bean, the secretary heard that our distinguished inventor-engineer-businessman, Henry Warren, had suffered some form of attack which rendered it advisable to have a few weeks of hospitalization. This attack may well have been due to overwork, for we all can remember the intensity with which Harry has worked for many years. Here is another of our Class who has utilized his abilities most unselfishly and has been interested in many good causes. A telephone message from Mrs. Warren on the day these notes were written (November 15) gave the gladdening news that Harry is now rapidly returning to his normal vigorous health, although not yet attending to affairs at his office. Harry has been so outstandingly active, both physically and intellectually throughout his whole professional life, that we can hardly think of him as in other than abounding health, and we

hope he will soon again be in that state. Again, those who have attended our Class reunions during the past two decades will remember how graciously the Warrens have contributed to our pleasure, and how generously Harry has sent us photographs of the group as cherished mementos of these occasions.

The instances cited above, and a recent attack of shingles, added to a long-standing cardiac ailment, leads the secretary to suggest that we should remember that the human machine, as well as others, is subject to functional disturbances and is not indestructible, although perhaps far more efficient than the machines of man's invention.

Jim Kimberly has reported that he has made his annual migration from Neenah, Wis., to his winter home in Tryon, in that beautiful and historic part of western North Carolina. Tryon seems to be equally attractive for either winter or summer sojourn, with its location near the high mountains of the middle Southland.

Through a notice which appeared in the *New York Tribune*, the Alumni Office reported to the secretary the death of Ben Edwin Holden, on May 7, 1956. No place or cause of death was given. Holden's last known address was 365 West 23rd Street, New York, but for more than ten years he responded to no Class notices or letters. It may be remembered by some of the Class and others who were in his fraternity, that Ben and his brother Frank entered in 1890 and took the two-year "partial course" in architecture. Both entered architectural work; Ben first at his home town of Aurora, Ill., and later in New York. Through J. P. Ilsley '97, the secretary learns that Frank later went to Paris to study at the Beaux Arts, and later was in professional or allied work in New York.

Greetings to all for a Happy New Year. — SAMUEL C. PRESCOTT, *Secretary*, Room 16-317, M.I.T., Cambridge, Mass.

## 1895

Sincere best wishes and a Happy New Year to all, from your secretary. Walter Atwood Hall, Course VI, passed away September 19, 1956, at the Cape Cod Hospital, Hyannis, Mass. After leaving Tech, he entered Harvard, receiving his A.B. degree in 1896. For six months he was draftsman with the Duryea Motor Wagon Company, Springfield, Mass. From 1897, to June, 1898, he was electrician and machine designer with Russell and Erwin Manufacturing Company, hardware builders at New Britain, Conn. In June, 1898, he went with the Lynn Works of the General Electric Company, and remained with this company to April, 1920. During this time, he served as assistant in the transformer department, then as engineer in charge of the General Electric Company, Lynn Works, and finally as assistant to the manager of these works. During 1920, he was vice-president and general manager of the Murray and Tregurtha Corporation of Atlantic, Mass.

He invented the "distributed type of transformer," which succeeded the "core" and the "shell" types of transformers, up



to 200 KW capacity. He maintained his own engineering office in Boston from 1927 to 1938, when he joined the Reconstruction Finance Corporation. He retired in 1948. He was president of the Lynn Y.M.C.A. for five years; president of "Old Essex Chapter," Sons of the American Revolution; a director of the Lynn Morris Plan Company, and also of the Industrial Bank; a fellow of the American Society of Mechanical Engineers and the American Institute of Electrical Engineers; a member of the Harvard Club of Boston and the Wallingford Historical Society; and an honorary member of the Whiting Club of Lynn. Surviving him are his wife, Mrs. Lucille (Reynolds) Hall, and a daughter, Mrs. Taylor B. Yeakley of Swampscott, Mass. Hall's recent residence was at Samoset Road, Eastham, Mass.

Louis A. Abbot has transferred from the State of Maine to Florida, and landed in Clearwater—but we now find him at 319 Broadway, Dunedin, Fla. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

## 1896

William H. McAlpine, dean of Army Engineers, died November 1, 1956, at Georgetown University Hospital in Washington, D.C. He retired from the Engineers in 1952 after half a century of service. He was chief engineer for the navigation developments on the Ohio River from 1922 to 1930, and on the upper Mississippi from 1930 to 1934. He then came to Washington as consultant on the design and construction of the third set of locks on the Panama Canal. He was also consultant on the Tennessee Valley dam projects. Major General E. C. Itchner said McAlpine was consultant on "all important Federal navigation projects planned or constructed in this twentieth century. . . ." More recently, as senior consultant he became widely known as a flood expert. His first job with the Federal Government was aboard the U.S.S. *Ranger*, mapping the Panama Bay. He was an honorary member of the American Society of Civil Engineers, a member of the Society of American Military Engineers, and past president of the Engineers and Architects Club of Louisville, Ky. He is survived by his wife, Regina Walsh McAlpine; a daughter, Mrs. Joseph N. Field of Cincinnati; and a sister, Mrs. Joseph E. Walworth of Andover, Mass. His home was at 4607 Connecticut Avenue, N.W., Washington, D.C.

The retired secretaries have made excellent recoveries from their hospital experiences. Both are quite limited to the distance they may walk, but Fred is able to walk from the Hotel Commander to John's home for Sunday dinner, and John insists on escorting his callers to the door. Mentally, they are keen and interested in current events, especially in the doings of classmates. Unfortunately, there were no communications, except one from Hattie L. Gates, whose name was misspelled in the class notes. — JAMES M. DRISCOLL, *Secretary*, 129 Walnut Street, Brookline 46, Mass. HENRY R. HEDGE, *Assistant Secretary*, 105 Rockwood Street, Brookline 46, Mass.

## 1897

Howard A. Noble, familiarly known as "Pete," was first marshal of our Class at the time of our graduation. Those who attended our 50th Reunion in Cambridge will recall that he was accompanied and guided by his wife, due to his failing eyesight. Since then she has died, but she was so much impressed by what she saw at M.I.T. that she inserted a clause in her will establishing the Howard A. Noble Scholarship Fund. The report for 1956 of the M.I.T. Alumni Fund lists a donation of over \$219,000 received during the year for this purpose, a notable gift honoring our classmate. Incidentally, this would seem to be a convincing argument for including wives at our reunions. President Killian, of course, for some time has emphasized the great need for additional funds for scholarships, which has been of vital importance in these days of rapidly increasing costs of education. The members of the Class will also, I am sure, take pride and satisfaction in the gift of another member, Irénée duPont, listed under "Other Gifts" as \$234,000; a substantial token of his continued generosity as a benefactor of M.I.T.

The following came from Irénée duPont, dated October 29: "George Wadleigh wrote me under date of the 23rd, trying to straighten out some statistics of gifts to the Institute. Apparently, I made a blunder in not sending an extra \$10, so as to put my name on the regular list, and they covered their tracks by claiming that I am a special donor, which doesn't count in the percentage of the Class for contributions. Why, I don't know. He also suggests that I should communicate with you concerning the possibility of a 60th Reunion of the Class of '97, next spring. I think I dropped out of the last such get-together because I was so shocked with the ravages of age and the empty chairs. Besides, I hate to travel more than I have to because I am too lazy and have to do enough of it going to and from Cuba, where I have a hobby. If, however, you can get together a reasonable number who can come, put me down as expecting to attend, God willing.

"As regards suggestions of sports, I have gradually reduced the number of golf clubs to about four, not that I have mastered any of the remaining four, but I couldn't do any better if I had 14. When it comes to Contract, I am the worst ever. I don't habitually revoke, but as I can't see very well, it would be quite easy to do so. Incidentally, just to sit around in the sun and talk with the boys is the best amusement that you could have in the 80-year old class, as I think we all are by now."

A letter received from Lawrence L. Gaillard, Box 457, Summerville, S.C., tells of several misfortunes that he has suffered during the past year in the loss of his devoted wife, his only child, and also two sisters, so that he is left alone and at times is very lonely. He speaks of being 87 years old, and I am sure that he would appreciate hearing from his friends. George Wadleigh writes that he and Eleanor called on Frank Shepard and his wife in New Rochelle in October, and at that time he was not too well. Frank

had much to say about his wide experience in the early days of electric railroads — we hope he will write in something for our Class notes.

We are of the opinion that Irénée's suggestion of an opportunity to sit around in the sun and chat with the other octogenarians will about fill our bill for a Class reunion in June, 1957. Unless, therefore, we hear of an urgent demand for a more extended reunion than just a luncheon somewhere in Boston or vicinity, we will probably go ahead with arrangements for such a plan. However, it is hoped that each member of the Class will write to the undersigned, expressing his definite opinion on what type of a 60th reunion he would personally prefer. Also, be sure to tell whether wives should be invited, and in general make known his wishes. It will be remembered that in 1952 we had a luncheon the day after Alumni Day, which usually comes the second Monday in June. — JOHN P. ILSLEY, *Secretary Pro-tem*, 26 Columbine Road, Milton 87, Mass.

## 1899

We regret to announce that Will Rogers Parker, VI, died at his home in Oakland, Calif., on October 24, after a year's illness. This information was received from his wife, Inez Wright Parker, in a letter dated November 4.

Will was a native of Lewiston, Maine. Although he graduated as an electrical engineer, he did not follow that profession, but spent a lifetime in the advertising field. He was connected with several of the larger advertising agencies in an executive capacity, and for 12 years before his retirement in 1949, was director of advertising with the Oakland, Calif., Chamber of Commerce. Will had four daughters, three of whom are living: Mrs. Betty Wilks of Harrison, N.Y.; Mrs. Constance Robinson of Piedmont, Calif.; and Mrs. Barbara Reierstad of Boulder, Colo. There are also five grandchildren. Will was a loyal son of M.I.T., and although the width of a continent separated him from his *alma mater*, always showed a strong interest in Tech affairs. — BURR R. RICKARDS, *Secretary*, 173 Edgewood Avenue, Pleasantville, N.Y. MILES S. RICHMOND, *Assistant Secretary*, Little Compton, R.I.

## 1900

Charlie Smith has been in Spain since August, making an investigation of the railroads of that country. He writes from Madrid, under date of November 9, as follows: "Here we are after three months in sunny Spain. It is just that. We arrived August 9 and did not suffer from the heat. It was cool in the shade and comfortably cool to sleep at night. Very low humidity made for comfort. Studying a railroad through an interpreter is no fun. Some departments have excellent statistical reports. They are a pleasure to study. Some have none and it is a task to dig out information. Except for tourists passing through, the embassy group, and some American contractors' staffs — which we never meet — there are few Americans here. We have only begun our invasion



after many years at arm's length. Madrid is a beautiful city. Wide parks and boulevards, monuments and fountains, palaces, churches, museums, etc. Spain has incalculable wealth in paintings, tapestry, sculpture, castles, cathedrals and historical spots. They are national treasures mostly acquired during the golden age of Spain, 1500 to 1600, with gold from America.

"Elsie and I have been to San Sebastián, the famous beach resort on the north coast, to Barcelona and Valencia on the south coast, and will leave soon for a ten-day trip visiting Granada, Málaga, Cádiz, Seville, and Córdoba. We finish our work and leave for home by air December 6. I finished my report today. It is being typed and will make about 100 pages. It has been an interesting experience. The railroads were so badly damaged during the Civil War, 1936-1939, that the owners could not raise the capital to rebuild them. So the government took them over. They are still in bad condition and it is an uphill job to improve them.

"Eating at hotels and restaurants for four months, even at home, would not be pleasant. Here it is unpleasant. We cannot adjust ourselves to the Spanish cooking of two heavy meals a day of very oily, unspiced, bland food, served by waiters with white ties and long tails. They are just beginning to open bars of a sort, but it is very difficult to find American cooking anywhere. Surprisingly, there are no negroes here, which is worthy of note. Elsie joins me in our best regards."

Warren Edson writes: "My present address is 2357 Woodlawn Circle, West, St. Petersburg 4, Fla. Phone: 73-3292. As for a story about myself, there isn't much of one. I retired January 31, 1948, after spending 35 years in the service of the Commonwealth of Massachusetts. Since then, I have spent the winters in St. Petersburg, and for the first time spent last summer here. Have no family — only a few distant relatives and in-laws. My wife passed on in 1944. Like my classmates, I am getting along in years, but have been most fortunate, having enjoyed good health."

And from Ralph Hamlin, a new address — 1136A Pershing Boulevard, Reading, Pa., and this note: "Have just finished 12 months' work in the field for Brown and Root, Inc., at the Southland Paper Company, at Lufkin, Texas. Am safely retired now at the above address." — ELBERT G. ALLEN, *Secretary*, 11 Richfield Road, West Newton 65, Mass.

## 1901

It is with much regret that I have to report the death of Anna Billings Gallup on October 21 in a New London hospital. She had a heart attack in her home in Mystic, Conn., and was in the hospital only one day. She was 84 years old. I sent flowers to the funeral in the name of the Class. Anna was one of our outstanding classmates. At M.I.T. she majored in biology. She was teaching in the Rhode Island College of Education in 1902 when the Brooklyn Institute of Arts and Sciences invited her there to establish and

become curator of a museum for children. From then on her life was devoted to children's museums. She retired in 1937. The Brooklyn museum became the model for more than 100 similar institutions throughout the world. Her theory was that museums should be places where children can participate in activity rather than look at exhibits. Her doings have been reported more than once in the Class notes. The last time was in the notes of last May. She brought great honor to our Class and will be greatly missed.

I have the following from Ed Brigham, X, of Brookline, Mass., written in March, 1956: "I have nothing unusual to tell. I've been retired for 20 years. With a house to take care of and the study and all to make a 50¢-dollar do what a dollar did formerly, I find plenty to keep me busy. I still skate a little during eight months of the year. Just now I'm rehearsing once a week for Ice Chips of 1956. I demoted myself a dozen years ago to a slower group of a large variety of ages. I can't hold the former pace. The show will be a good one, at the Garden, April 5, 6, 7, 8; the world's best heading a very large cast. In case any classmate gets into trouble in Rockingham County, N.H., my eldest son is County Solicitor at Exeter."

Arthur Little, V, of Port Jervis, N.Y., hoped the Class reunion would be a great success and regretted that he could not attend. Phil Moore reported in March that he saw the obituary notice of Arthur Payne, II, on February 5, in a *Winnetka* paper. I seem to have misplaced the notice and therefore can give you no further information. Will Kelley of Wilmette, Ill., wrote in March that his family was to have a reunion in June at a ranch in Montana and he would not be at the reunion.

Since starting to write these notes, I have received a letter from one of Anna Gallup's nieces, which I think would interest the Class. I will give it to you verbatim: "Dear Mr. Taft: Will you be good enough to convey to the members of the Class of 1901 of M.I.T. the warm thanks of Anna Billing Gallup's family for the beautiful flowers which brought their sympathy to the memorial service for her? My brother and sister and I, her nephew and nieces, are deeply appreciative of your thoughtfulness. Aunt Anna enjoyed the association with her classmates, and her 50th Reunion was a high spot for her. We feel that she brought honor and distinction to her class, and we know she was proud to be an Alumna of Tech. You may perhaps like to know that Miss Grace MacLeod came to Mystic for the services. With again sincerest thanks, Cordially, (signed) Anna de Lancey Mears."

It was encouraging to note that I had 46 replies to the 1956 Class letter — more than the previous year. As of November 1, I have had 15 replies to the questionnaire about the next reunion, with a variety of ideas. At the moment, I would not know what to suggest. I have neither the time nor the inclination to run the affair, and I think Willard Dow has done his share. I would be glad to have suggestions. I doubt if many would come. — THEODORE H. TAFT, *Secretary*, Box 124, Jaffrey, N.H. WILLARD W. DOW, *Assistant Secretary*, 78 Elm Street, Cohasset, Mass.

Dan Patch, as Class agent, wishes to make the following explanation to the members of '02. He recently had a letter from Bill Kellogg in answer to his October 15 Fund letter. Let him carry it from here: "I want to quote from a letter recently received from Bill Kellogg: 'About the Fund, of course I will subscribe again, but I have been doing it in March, as I did this year. So if I could get a follow-up in the spring, it would help. I was much interested in the report on the Fund, which I received yesterday, and especially to note that '02 was high gun for the total of classes along about our time. I was delighted to hear that they approached \$600,000 last year.'

"I think I owe Bill and all other '02 men an explanation. It has been somewhat of a task, and not an overly agreeable one, to have to compound periodic appeals to my classmates to give to the Fund. I have always felt more or less guilty because I could not give more myself, even though I was among the first ten contributors. You see, I have been a tither all my life and so have not laid up a fund from which I can make large gifts, and by the time the Alumni Fund was started, I had built up a tithing list that included some 50 or 60 institutions or organizations, and I did not feel that I could cast off any of these in order to aid the Alumni Fund. So it meant squeezing the purse. I did not, however, feel that I could throw up the job of Class agent as long as I could give something to the Fund. Each class has a group who are the largest donors. Note that I do not say the most generous donors, because some of the lesser contributors may be more generous in view of their resources. The Class of '02 had such a group on which I could count for substantial gifts. In 1952, I received a letter from one of this group in which he said: 'I am not subscribing, as I am in process of negotiating with Bob Kimball for the rather extensive renovation of one part of the Faculty Club. If I do that, it is all I feel like doing for Tech this year.' So I lost one of my best contributors until the Alumni Fund Board got religion in 1956, and decided to consider these capital expenditures as part of the Fund.

"This accounts for \$31,622.37 of the '02 contributions for the 1955-1956 year, listed as \$34,725.37. If you would make a comparison of 1956 with 1955 on the same basis, here it is: Contributions, \$2,121; life membership allowance, \$44; contributions in 1956, \$3,058; life membership allowance, \$40. So you see it was not due to any persuasiveness of your Class agent but to the bringing in of a new kind of money by fiat which put '02 on the map."

Miss Beckler, in reply to a request for information as to her professional career, sends the following, as copied from *Who's Who in the East*: "Instructor in bacteriology, Simmons College, Boston 1905-1945, assistant professor public health, emeritus; bacteriologist in charge, diagnostic laboratory, Division Communicable Diseases, Massachusetts Department of Public Health, Boston 1914-1946. Member Society of American Bacteriologists and

Massachusetts Public Health Association. Author of occasional articles on bacteriological subjects in medical journals." Your secretary would supplement this rather factual statement with an excerpt from an article in a bulletin of the Massachusetts Department of Public Health, *The News Letter* of February, 1947: "Miss Beckler, in her 32 years as head of the laboratory, built soundly, overlooking no detail which would give the physicians of Massachusetts their reports as promptly as consistent with accuracy."

In May, we reported that Marvin, just back from a trip to the Mediterranean countries, had broken his leg the first day at home by tripping over a rug. He now writes that at this time, November, he is still on two crutches, having had two operations on the leg in the last two weeks. He hopes to get onto one cane by Thanksgiving. It has been a long siege, but it has been eased this summer by some auto trips in the Colorado mountains, and there is a chance that he may go to California or somewhere on the Gulf of Mexico this winter.

Another of our classmates of the Boston area has passed on. Ralph S. Franklin, long associated with the Lockwood-Green Company of Boston, died on October 24. He had served in the past as president of the American Society of Heating and Ventilating Engineers, and was well known in his profession. He left his wife, Marie Patch Franklin, a son, Richard, and a daughter, Mrs. Mary F. Bunting. Our Class was represented at the funeral services in Melrose by Moore and Bourneuf.

Be sure to reply to the notice of our 55th Reunion, which you will receive this month. — BURTON G. PHILBRICK, *Secretary*, 18 Ocean Avenue, Salem, Mass.

## 1903

We note with regret the death of William H. Whitcomb, V, on August 9, 1956. Following graduation, he served as professor of chemistry at Miami University, Oxford, Ohio, for 12 years. In 1915, he accepted a position with the Research Department of the U. S. Rubber Company at Naugatuck, Conn., which he held for 13 years. In 1928, he transferred to the Scott Testers, Inc., of Providence, R.I., serving in the Executive Sales Department, for about three years. In 1931, he became director of laboratory at the Interlaken Mills, West Warwick, R.I. Returning to academic work in 1934 as a teacher in the Textile Division of the Rhode Island School of Design, he rounded out 15 years of service until retired in 1948.

For the past 26 years, in addition to other duties, he was secretary of Committee D-13 on textile materials of the American Society for Testing Materials and at one time was chairman of this important committee. On his resignation last March as secretary of Committee D-13, he was honored at a reception and presented a silver tray in recognition of his faithful service. He also formerly held membership in the American Chemical Society, and at the time of his death was a member of Doric Lodge, A.F. and A.M., and of the Shrine of Cincinnati, Ohio. He was a past master of Roger Williams

Grange of East Providence and treasurer of that unit. A member of St. Michael's Episcopal Church in Bristol, R.I., he was held in admiration and esteem by those who knew him. Primarily a teacher, the many fine young men who came under his guidance to become textile engineers will long remember him as a quiet, unassuming man of wide knowledge and ability. His training was augmented by graduate work at Harvard and Columbia. He resided at 41 Norman Avenue, Cranston, R.I., for the past 23 years, and is survived by his widow, Mrs. Gertrude G. Whitcomb.

Another member of the Class who has been very active in manufacturing and civic affairs, Ichabod F. Atwood, II, has decided to relinquish one of his important responsibilities. On October 4, 1956, he tendered his resignation as president of the Chelsea (Mass.) Savings Bank, a position he has held for nearly two and one-half years. His resignation was accepted with expressions of regret and he was then elected chairman of the Board of Trustees. We trust he will long be able to enjoy his added leisure and his many other interests.

Edward J. Ruxton, treasurer and general manager of the Adams and Ruxton Construction Company, died November 6, 1956, in the Springfield, Mass., hospital, after being suddenly stricken at the Colony Club. He was a leader in the city's business, civic, and political affairs for many years. Born in Ludlow, Mass., April 29, 1881, he attended the Springfield High School before entering M.I.T., where later he served as an instructor in mechanical engineering for three years, and then as an engineer for the American Manufacturing Company of Brooklyn, N.Y. In 1909, with A. C. Birnie, he founded a business concern which was later joined by the late Mayor Arthur A. Adams and became one of the leading construction firms in Western Massachusetts. He was married July 1, 1911, in Springfield, to Frances C. Taylor. Beginning in 1922, he served eight years in the City Council, four in the Common Council, and four on the Board of Aldermen. He continued his public service for a number of years as a member and also as chairman of the Fire Commission. He was active in the Hampden County Improvement League and was a trustee for the county aid to agriculture, and also for the Springfield Institution for Savings. A member of the Colony, Rotary, and University Clubs, he was active in numerous charitable and civic endeavors, and will be greatly missed. — LEROY B. GOULD, *Secretary*, 36 Oxford Road, Newton Centre 59, Mass.

## 1904

These notes are being written on November 15, 1956, and so with respect to the condition of the health, etc., of classmates, must be considered as of that date, although you do not read them until at least one and one-half months later. When I called Dave Sutton on the 'phone the other day, Mrs. Sutton answered and said that Dave was at the office, so we are safe in assuming that he has continued to improve again, for

which we are all glad. Gus Munster is also improved and gets about and into town quite often now, and we are all glad to know that.

Mrs. Stevens and I, the Munsters, and Ed Parker had dinner not long ago at the "Old Mill," a famous eating place in Westminster, Mass., and for a small Class gathering it was a very pleasant one, and much enjoyed by those present. President and Mrs. Hayward have given up their long-time residence on President's Lane, Quincy, Mass., and have now become urban dwellers at their new residence on 120 Beacon Street, Boston.

I do not know any reason for the delay in telling you all that on June 17, 1956, Mr. and Mrs. John Allan Boyce and Mr. and Mrs. Robert Prescott Palmer gave a reception at 244 South Prospect Avenue, Clarendon Hills, Ill., in honor of the 50th wedding anniversary of their parents, Mr. and Mrs. Guy Prescott Palmer. There may be others amongst us who have been married 50 years, but this is the first couple who has had official notice taken of that fact. We trust the affair was well attended and that all present enjoyed themselves to the utmost. From the secretary comes the official, though much belated, congratulations of all his classmates to Bob and Mrs. Palmer.

In the November notes, I mentioned that I had received the regular notice from the Alumni Office of the death of our classmate, Percy A. Staples of Hershey, Pa. Since I received that notice, I have had a communication from Edward B. Rowe, the secretary of the Class of 1906, informing me that although Staples was listed as a member of 1904 by the Alumni Office, and attended M.I.T. for seven years as a member of 1904, he received his degree with the Class of 1906. He sent me a clipping from the *Harrisburg Evening News*, giving the details of his death and some details of his life and experience since graduating from M.I.T., which makes interesting reading about one more of the Class of 1904 who have gone to high places in the world. I am very grateful to Mr. Rowe for his kindness and thoroughness in sending us the news.

The clipping reads, in part: "Percy A. Staples, president of the Hershey Chocolate Corporation, died today. He was 73. Staples, who took over the huge Hershey enterprises after the death of their founder, Milton S. Hershey, in 1945, was found dead in his suite at the Hershey Hotel. Apparently he died in his sleep during the night. He is survived by his widow and two brothers. In addition to heading the Chocolate Corporation, Staples was chairman of the board of the Hershey Trust Company, which administers affairs of the multi-million dollar Hershey School for Boys.

"Born in Portland, Maine, on March 31, 1883, he was the son of Charles and Maria Hay Staples. Left an orphan at 12, he finished public school, entered the Protestant Episcopal Academy at Philadelphia and then M.I.T. The next few years saw him flit from one constructional engineering and business project to another and then to the organization of public utilities in the East and Middle West. Shortly afterwards, Hershey asked



him to become comptroller of the Hershey Cuban interests. He married Eliza A. Turner of Houghton, Mich., in 1909. They had no children."

I have received from the Alumni Office the routine notice of the death of our classmate, Henry S. Sherman, who died in Cleveland, Ohio, on October 28, 1956, but of course such notices give no details. His address was: Society for Savings, 127 Public Square, Cleveland 14, Ohio.

I have received from our Class agent, Louis H. G. Bouscaren, his opening gun on the two-year campaign for the Alumni Fund. Possibly you all got the same or slightly different notice from him. In case you did not, here follows his note to me, so you can govern yourselves accordingly. "It's my high privilege this fall to fire the opening gun of our campaign from this old manor house in Languedoc, whose forebears left three centuries ago to seek adventure in a newer world. Likewise, it's an opportunity for you, because next week we hope to be at Lourdes and from that shrine shall confidently pray that all who send a tribute to the Fund may see it coming back to them a millionfold. With every good wish, your class agent, Louis H. G. Bouscaren."

President Hayward sent me another communication from Bouscaren on the letterhead of "Market Facts, Incorporated - Marketing research and counsel," a concern with which Bouscaren has become associated since his retirement by Stone and Webster. This note from Bouscaren gives some facts regarding the death of our classmate, John H. Foster. "Dear Carle: I enclose a note from Mrs. John H. Foster regarding the death of our former Course V classmate. The address is 47 Auburn Street, Concord, N.H. Will you be good enough to see that our secretary hears of this demise? I have written Mrs. Foster a short note of condolence. We have just returned from a five-week trip abroad, and mighty glad to get home."

Also from Carle Hayward came the following note: "The following item may be of interest. George Harrington and Carle Hayward have been elected to the 'Legion of Honor' of the American Institute of Mining Metallurgical and Petroleum Engineers. This group is composed of those who have been members for 50 years." We are always glad to hear of honors which have come to our classmates, and it is really a joy to be a member of an organization to whose members have come so many honors.

That seems to be all I have for this issue, but as the old adage says: "Hope springs eternal in the human breast," and so I continually hope for more and more Class news, especially as the portion of the year is coming along in which there is usually a dearth of material. It doesn't cost anything to hope. Although these notes are written before Thanksgiving dinners are cooked and Christmas presents are bought, as you read them, I hope you all had a bountiful Thanksgiving dinner, many, many wonderful Xmas gifts, and a thoroughly enjoyed Holiday Season, and have started on a wonderfully Happy New Year. - HENRY W. STEVENS, Secretary, 1082 Commonwealth Avenue, Boston, 15, Mass.

With memories of Christmas and perhaps New Year's parties, for a change let's start these notes with a recent osculatory affair as reported in the Boston Herald of October 26: "The State's newest judge, Miss Martha Ware of Abington, got a special kind of congratulation yesterday after taking the oath of office. She got a kiss from Executive Councillor Augustus G. Means of Essex, a one-time Republican Colleague in the House. Miss Ware was sworn in by Governor Herter as special judge of the Hingham-Abington district court. Attending the ceremony were her parents, Mr. and Mrs. Samuel Ware, and several friends." Her appointment was in the cards at reunion time, so we had a chance to congratulate ma and pa. Maybe it leaked out then that Terrell Bartlett had a month previously given a talk about - of all things - water! We didn't know about it until Percy Tillson sent in a clipping: "Before the Torch Club of San Antonio on April 9, Terrell Bartlett, outstanding hydraulic and water supply engineer, discussed the timely and somewhat controversial subject; water supply as affecting the future of San Antonio." Incidentally, a similar subject would be just as timely in numerous other areas in these 48 states, and what is being done about it? (See comment by Altgelt in November '07 class notes.)

Speaking of reunion, if everybody who expected, planned, or wanted to attend had been able to do so, then Snow Inn would have been *snowed under*! In the June Review, Jim included in the class notes a sampling (8) of the numerous letters we had received, expressing regret they couldn't be with us and extending greetings and best wishes to classmates and coursemates. Many registration sheets carried similar notations, and a few who had definitely planned to come - some even made hotel reservations - just didn't make it for various reasons. Jack Norton wrote on April 23: "I am still in the hospital and probably will be for another ten days. However, I am getting along better than could be expected, but at my age, heart tissue repairs itself slowly, and I will have to take things easy for the next few months. There is every indication that I will be as good as ever by next autumn. All of this means that it would be unwise for me to attend reunion, and this is a very great grief to me, as I had been planning on it for the last few months." Jack had been a helpful Course V correspondent, and he was doubtless pleased to note that two of the three he had urged to attend reunion had done so; Dr. Helen Hosmer and the Jim Ormes. As it is November when these notes are being written, let's hope that by the time you read them, Jack is really "as good as ever."

Another who almost made it was Johnny Morris, VI, who wrote on June 18 from Salt Lake City: "Some last-minute circumstances prevented my getting back to reunion. May be in Boston later on and will try to look you up. Hope all had a good time." Then there was Llewellyn Parker, IV, who wrote from Los Angeles on May 3: "... Mrs.

Parker and I are going on a trip 'around the world' late this fall; a trip which we have contemplated for some time and ... with this now assured, we have had to give up the trip to our 1906 reunion. When we arrive on the East Coast from Europe on the way home, we will take in Boston and look you up. I do not see Mayberry very often, as he seems to stay in Long Beach. I saw Bill Furer last summer and hear from him occasionally - always when I pay my Honolulu Architectural License fee. The reason for that being Bill's almost 30 years service as executive secretary of the 'Hawaii Board of Registration for Professional Engineers, Architects and Land Surveyors.'"

For other interesting letters, let's start with Course I, which had 33 living members on the current list, of whom 11 attended reunion. Besides Burpee and Harold Elliott, previously reported, three others wrote to Jim. Like many who had attended another college and entered M.I.T. in the sophomore or junior year, Elmer McCain had graduated with '06, although "I entered in the junior year and consequently did not make the personal contacts that are made when entering as a freshman. Before going to M.I.T., I graduated from Washington and Jefferson, and two years ago attended my 50th reunion there, and really look upon that college as my *alma mater*. Although not active in alumni work, I have always kept in touch and had thought of attending the reunion this year, but find it conflicts with the annual meeting of the National Apple Institute. As I represent the State of Maryland in this organization, I feel I should attend. After graduating, I only remained in active engineering work for about ten years and, then mainly for reasons of health, went into orchard work. My engineering training was helpful, with so many operations becoming mechanized, and I am fairly well known through this territory as a fruit grower." Elmer has certainly "kept in touch," as his card shows a perfect record in meeting requests for class dues, and he has certainly been active in other organizations, viz.; past president Maryland State Horticultural Society; member Maryland State Apple Commission; director National Apple Institute and Appalachian Apple Service, Inc.; member Frederick Chamber of Commerce; treasurer Frederick Presbyterian Church (35 years); first president Catocin Country Club of Frederick. The McCains have no children, but they raise purebred hunting dogs for hunting and the show ring. "Should George Burpee or Clarence Carter be present at the reunion, you might say hello to them for me, as they seem to be about the only ones left that I knew. Trust you will have a most enjoyable reunion, as I am sure you will."

Another who was good enough to write - Arthur Sherman - is still a consulting engineer in Washington, D.C., and said: "Despite all my hopes and plans to be with you, my wife's long-time illness has taken a bad turn, and I can't justifiably be away from home. It's a great disappointment, but I'll simply have to pass up what is probably the last chance to see whoever remains of the Class of 1906." Now Arthur, there are still about 230 of



us around, and Alumni Day comes every June. From the University of Washington, Department of Mechanical Engineering, Professor Arthur Winslow expresses "appreciation for all your efforts in arranging the Class reunion. I have been in the Northwest for years, and have not been in Cambridge since 1934. Son Russell however, now with Boeing Airplane Company here, graduated in Course II in 1941. Together with the enclosed payment of class dues toward a successful reunion, I wish to send greetings and good wishes to classmates of 1906."

Since Course I has the floor, this is perhaps the place to record the death on July 23 of a prominent and successful Alumnus who graduated with '06, but had chosen to be listed with 1904. Percy A. Staples died in Hershey, Pa., after many years in charge of Hershey interests, as president of the Hershey Chocolate Company and chairman of the board of the Trust Company, "which is trustee for the multi-million dollar fortune Hershey built around a candy bar and administers for the Hershey Industrial School for Boys." Alert and helpful Percy Tillson sent in a lengthy clipping from the *Harrisburg News*, which was sent to the secretary of 1904, to whose class notes you are referred for more complete details. We regret to report the death also, on August 23, of another successful and prominent graduate of Course I — Ralph Haney Burke, who may be remembered especially by the dwellers of Tech Chambers. The *Chicago Tribune* of August 24 carried a full column account of his long professional career, all of it in Chicago, his home town. Ralph was the son of Judge Edmund W. Burke, one of the founders of the Kent College of Law, and started to follow his father's profession, but after two years at Northwestern, he transferred to M.I.T., probably entering in our second year as, according to Senior Portfolio, he was on the track team in 1904. From 1906 to 1920, he was with the sanitary district in various capacities, becoming principal construction engineer, and in 1915 was chief engineer of the Illinois Waterway Commission. For the next 14 years he was civil engineer and general superintendent of a Chicago contracting firm which constructed a number of public works. Then followed a long period as civil engineer of the Chicago Park District, interrupted in 1935-1936 to become deputy administrator for W.P.A. in Illinois, and again in 1938-1941 to serve as civil engineer for the city department of subways and superhighways, returning to the Park District on completion of the State Street tube. Since 1946, his own company has handled numerous public and private engineering and construction supervision jobs, including Meigs Field, O'Hare International Airport, and the Grant Park underground parking garage. He was a trustee of Kent College, a member of the Chicago Athletic Association, the Tower Club, and several engineering societies. He is survived by his widow, Edna; a son, Robert W.; a daughter, Mrs. Martha Campbell; a brother, Webster H.; and five grandchildren.

Now we will let Course II take over. Of the 57 on the current list, 12 attended

one or more reunion events, as noted in the November Review, and letters from two, Hicks and Mann, were mentioned in the June notes. In addition, letters were received from the following: Francis G. Baldwin wrote: "It goes without saying that I am extremely sorry not to attend the fiftieth reunion. I do, however, wish to send greetings to the Class of '06 as an entirety and particularly to such as may remember me. All that I can brag about is that I was a member of that famous class." Robert Cushman sent a message: "Dear Classmates of 1906: I retired seven years ago and had looked forward to our fiftieth. It was with deep regret that Mrs. Cushman and I gave up plans to be with you. A heart condition necessitates a very leisurely routine of daily life for me. Let me convey a very appropriate Spanish motto as a toast to you all, retired or anticipating retirement — Salud, poseites, y amor, y tiempo para agustarlos. Mrs. Cushman and I would welcome visitors, should any of you pass this way." Robert is President Emeritus, M.I.T. Club of Oregon, after some 30 years more or less.

Fred Earle wrote: "Dear Classmates: I am truly sorry I cannot be with you at the reunion. I am confident you will all have a heart-warming get-together, and you sure have my best wishes for a great success." Arthur Feeley is general manager of the Chicago Short Line Railroad Company, and wrote: "I was hoping to make it, but find that business will keep me away. Regards to any who might remember old 'Red Head,' and here is a little donation to help out the Class expenses. Sorry I cannot be with you." Another disappointed, and disappointing, classmate was Bill Lourie (now probably basking in the sun at St. Pete): "Dear Classmates: Sorry that I am unable to attend the 50th reunion. I had a tentative date with Jimmy Wick (a couple years standing) to meet him at Tech on our 50th. However, due to sickness, I am not able to do so. Too bad, as I would have liked to meet again classmates and friends and to enjoy talking over the good times of long ago, etc. My sincere wishes for a most glorious reunion, and regards and best wishes to all members of the Class."

Sometimes it works the other way. Dr. Means was on deck at the Commencement doings, although this is what he wrote to Jim in April: "The Class of 1906 has been very hospitable in inviting me to attend the reunion, despite the fact that my connection with the Class was limited to one year as a special student. I would like to be with you, at least on some of your occasions next June, but I am afraid it is going to be impossible. I am about to go abroad and shall not get back until the beginning of June, and during the reunion I shall be very occupied getting a stepdaughter married, so I can be with you in spirit only." Although retired, Dr. Means gets around. The Portland (Maine) *Press-Herald* of October 12 carried a Waterville item: "Dr. J. Howard Means, professor emeritus of clinical medicine at Harvard University, will lecture at Colby College at 8:00 P.M. Friday. A graduate of M.I.T., he received his medical degree from Harvard in 1911. Appointed to the medical school

faculty in 1919, he was named Jackson Professor of Clinical Medicine in 1924, a post he held until his retirement in 1951. Dr. Means is a member of the National Advisory Health Council of the U. S. Public Health Service. His lecture is the first in the annual Averill series, made possible each year through the generosity of Mrs. George G. Averill." Herbert Philbrick, who is another professor emeritus (Northwestern), after acknowledging several cordial letters and commenting on the fine arrangements for a good reunion, told Jim he was sure he would be unable to attend, sent greetings to the Class, and for "information" about himself, said: "Mrs. Philbrick and I are in good health and active. We are transplanted Maine Yankees, have four children, seven grandchildren, and the center of gravity of the tribe now is Evanston, though one family lives in Pittsburgh. We still have our summer place on Squirrel Island."

Passing along to that dynamic Course III, there were 29 living members on the list, of whom five attended the reunion, and many answered the appealing letters from Henry and Dick. Typical of those with a conflict of interest and association, James Buchanan had this to say: "Under somewhat different circumstances, your letter would be sufficiently persuasive to insure my attendance at the 1906 semi-centennial. Unfortunately, you are up against some even more eloquent and almost irresistible competition in the Princeton reunion season which occurs over the same weekend. As between the two there can be no choice. I have not missed a reunion of our class at Princeton during the 52 years since we graduated. [That's loyalty with a capital L, Jim — no, ALL capitals.] I would like to come back after 50 years, and have even toyed with the possibility of attending both on an abbreviated basis, but such a compromise does not appear to be either possible or satisfactory, and I have reluctantly decided to pass it up. With best wishes for a successful reunion and cordial greetings to any classmates who may still remember me." An excellent example of what we can turn to as senior citizens to keep busy and happy, Harry Buker wrote from Monrovia, Calif.: "It was a pleasant surprise to receive your personal letter . . . I would indeed like to be there but, unfortunately, I have a heart condition which limits my activities. . . . We have a pleasant place up here in the Foothills, one and a quarter acres, with 43 avocado trees, all sorts of citrus and other fruits and flowers, and here in Southern California we have flowers the year around. We also have a very promising herd of chinchillas. We are 18 miles from the civic center of Los Angeles and 9 miles east of Pasadena. Please give my best regards to any '06 men who may remember me."

Quite a different avocation is that of Bill Deavitt, now living in Beverly Hills, who wrote: "I am sorry that I shall be unable to come east this summer and thereby take in our celebration, much as I would like to. I haven't attended a Tech reunion since that of 1909, so I might be more or less of a stranger after such a long absence, but I should like to join you and renew old friendships. There is

nothing particularly new with me. I have practically retired as a mining engineer, and have devoted my time to my old hobby of genealogy, which keeps me busy, especially as I am genealogist for the California Society Sons of the Revolution. I have two married daughters and six grandchildren living in California, so I don't lack for something to keep me occupied. With kindest regards and best wishes to all of my classmates, and regretting my inability to be with you." In a few cases, the reunion schedule just didn't click. For example, Walter Hopkins wrote on April 20: "Tomorrow, with another man, I leave on a rather lengthy vacation trip which will include being in Boston about this date next month, but will be back in Pasadena about a week prior to June 8, so you will see why my answer has to be in the negative. Hope you all have a happy and interesting time." Off the record, Walter might have sprained an ankle or something while in Boston and recovered just before June 8 — Yeah!

Charlie Willis likewise was pleased to get that personal letter from Henry and Dick. Writing on April 27 from Phoenix, he says: "I have delayed replying because I had hoped I could tell you definitely that I was going to be there, but I have been fighting a rather bad case of arthritis, which makes it very difficult for me to get around. I would like nothing better than to be able to personally greet some of our 1906 boys, for outside of those who have been engaged in mining, like Kinnear, Plummer, Libby, and a few others, our paths have crossed but little. In addition to graduating with the Class of 1906, I have other connections which are affiliated, in that in 1908 I married the sister of A. R. Heckman, Course V, and he married my cousin. Heckman passed on several years ago, but my wife still has a keen interest in the Class of 1906, in that it was the class of both her husband and her brother. I know you will have a wonderful get-together." Charlie is still in touch with the miners, being State secretary of the Arizona Small Mine Operators Association, and sent along a clipping with a photo of Marden Hayward, whose death on February 4 was previously reported: "Mr. Hayward was a consulting mining geologist for the American Metal Company. He had long been associated with the American Mining Congress, and was particularly active in the A.M.C. Convention at El Paso in 1947."

Those cordial, personal letters did get results, at least as far as interesting replies are concerned. Fay Libbey wrote from Portland, Ore., on April 29: "First, I want to tell you that it was a thrill to hear from you after all these years — so long to look forward to and so short in retrospect. A year ago, I had thought I would get back to Boston for the reunion, and even discussed driving back with Henry Mears, Bob Cushman, and Bill Cady, but last winter I had a bad attack of pneumonia and have given up the trip east. I see Henry Mears quite frequently at our Oregon Section A.I.M.E. meetings. Guy Ruggles and his wife called me up a couple years ago when they were passing through, and we had dinner together. In

1952, when I was in Los Angeles for the American Mining Congress meeting, I was indeed pleased to see and talk to both Marden Hayward and Ray Barber, and now they are both gone. In November 1954, I retired as director of the Oregon Department of Geology and Mining Industry, a job I had held for ten years after serving seven years as mining engineer. Am doing a little consulting work, but I can't climb the mountains any more, and I am not eager to take on much field work. Of course I regret that I cannot go back for the reunion, but there are some compensations. I would rather think of my classmates as they looked 50 years ago than to see how they have aged since I last saw them. Best of luck, Dick, and I hope you have a whale of a good time in June."

Henry Mears wrote long letters to both Dick and Jim, from which here are some excerpts: "As you say, we mostly go far away or at least in out-of-the-way places, so cannot get to Boston as often as we should. Fay Libbey and I had talked over the possibility of driving back for the 50th, but he now does not feel up to it and I cannot easily leave at this time. In the April Newsletter, notice was given of the Annual Fiesta in Mexico. I arrived there in the afternoon, but knew nothing of the event so missed all the fun. I certainly would have liked to renew my acquaintance with Dean Lobdell, whom I have not seen for many years. I have not done much in the mining line for the last few years, due principally to age, so I have devoted my time to running the place here — sort of a semi-farming operation with some rental houses. This keeps me very busy, and I am constantly learning something about farming. It is a great deal more technical than one would suppose. At any rate, it keeps me in good health. I try to keep up with Tech doings and attend all the local meetings. I will be with you in spirit, if not in person, and extend my best wishes to all those present." Harold Plummer, after giving Dick a well-merited pat on the back, relates: "Guy Ruggles is the only Tech man I have seen much of in recent years, and he really is a Tech stalwart. I have mined always — always in copper — up until 1931, when I had to give up on account of poor vision. Since then I have been rusticated on a little citrus orchard in Phoenix, and find running a farm much more difficult than mining! Have been back East only once in the last 25 years and won't this year, although I have two sisters there. I hope the 1906 gang will have a deservedly gala reunion." For the record, what Harold said about Guy Ruggles is only faint praise, for his loyalty and cooperation have been an inspiration through the years, and his frequent contacts with his fellow miners have helped to stimulate their interest too. Goodness knows what sacrifices Guy had to make, and what difficulties to overcome, in order to attend our 50th but there he is, number four in the front row in the group photo at Snow Inn. You are not only an inspiration, Guy — you are an example to emulate!

However, when one is handicapped, like Ralph Thayer in San Diego, a letter is about the only possible representation, and he wrote several, in the most unique

script your secretary has seen in a long time. Arthritis is Ralph's trouble, too, and expressing his regret at not being able to attend, added: "I sadly realize that one can have only one such reunion, and feel very badly that I cannot be there. What a marvelous occasion it will be, and I will be there in spirit at least. A pity that this event could not have occurred two years ago when I was in good health and visiting with a sister in Westfield, Mass." Another miner is still active as a mining engineer in Denver. Clifford Wilfley wrote Jim: "I doubt very much that I will be able to come, much as I'd like to, and I hope you will be rewarded with a fine turnout." Well, it certainly was, and perhaps you have enjoyed reading about some of your classmates who couldn't, or didn't, come. In future Reviews, the reunion letters from the other courses will be abstracted, but there are many of you we haven't heard from — yet. Would YOU like to hear from some chum of those "hellish" days? He'd probably like to hear from YOU, and the next six or eight weeks were made for letter writing, so why wait? By the way, send me a copy. — E. B. ROWE, *Secretary*, 11 Cushing Road, Wellesley Hills 82, Mass.

## 1907

From 6:30 to 10:00 P.M. on last December 8, the delightful fellowship that to '07 men can exist only when men of our Class assemble, pervaded the atmosphere of one of the private dining rooms at the M.I.T. Faculty Club at Cambridge, Mass., where some of us had gathered to partake of a delicious and bountiful dinner. Those present were: Dick Ashenden, Gene Banfield, Bill Coffin, George Crane, Ellis Doucette, Harry Moody, Bryant Nichols, Don Robbins, Gilbert Small, Oscar Starkweather, Albert Stevenson, Phil Walker, Stanley Wires. After we had eaten and were filled, I told of facts regarding a few of our classmates, gave a summary of the voting on the '07 "Reply Sheets," which had then been received, told of progress of our Class Fifty Year Gift Fund, and then introduced as our speaker of the evening, M. Bryce Leggett, who has an A.B. degree from Harvard, an S.M. degree from Tech in chemical engineering in 1940, and who is assistant director of admissions at M.I.T. In a happy, informal manner, he told of the problems confronting all colleges as they strive to admit as freshmen only boys who will measure up to the required standards, and then he related the methods used at the Institute in "screening" the thousands of boys who each year manifest definite interest in entering Tech, so that the actual freshman classes consist of between 900 and 1000 students. The fact that all of us were wide awake and alert after Mr. Leggett had talked to us for nearly an hour was ample evidence of the enjoyment that he gave to us.

Through a letter that I received on last October 20 from Roy Lindsay, who is president of Pratt and Lambert, Inc., paint and varnish makers at Buffalo, N. Y., I first learned of the death, on October 12, 1956, after an illness of six weeks, of Tom Keeling of our Class. Thomas Callender Keeling, Sr., entered



Tech with our Class in the fall of 1905, as he had attended Vanderbilt University in Nashville, Tenn., from 1903 to the spring of 1905. He received his degree with us in electrical engineering. After working for seven years for Stone and Webster Engineering Corporation, he became manager of Nashville Machine and Supply Company, in 1917 was elevated to its presidency, and at the time of his death was chairman of the board. He was highly respected in all circles in Nashville and vicinity, being a member of the Chamber of Commerce, Middle Tennessee Heart Association, Sons of the American Revolution, Tennessee Historical Society, Richland Country Club, Phi Delta Theta fraternity, and Westminster Presbyterian Church. His funeral services were held at that church, and the names of 26 pall bearers are listed in a clipping from a Nashville newspaper. He is survived by his widow, two sons, and six grandchildren. (His son, Tom, Jr., was graduated from M.I.T. in 1935, and is now with the Koppers Company in Pittsburgh, Pa.) I wrote to Mrs. Keeling, whose address is 143 Ensworth Avenue, Nashville 12, Tenn., and in reply received this note: "Thank you for your kind letter of sympathy. It helps to know that our friends are thinking of us in these hours of heart-breaking grief. It is as you say — Tom was an outstanding, loyal, and beloved person, not only by his family but by the whole community, and his loss is one that will be felt for years to come. Most sincerely yours, Bessie Lee Keeling."

A post card mailed last October 11 from Florence, Italy, by John Frank, reads: "We are enjoying again the beauties of Florence after seeing Milan, Como, Verona, Venice, Ravenna, and Pisa. Flying to Athens next Wednesday. Home November 13." A clipping from a Cape Cod paper states that Milton MacGregor celebrated his 72nd birthday on September 10, 1956, by climbing Mount Washington in New Hampshire, accompanied by his two 13-year-old granddaughters. After spending a night at Pinkham Notch Hut, they climbed to the top of the mountain by the Huntington Ravine Trail, staying that night at the Lakes of the Cloud Hut, where a large decorated birthday cake was served in Mac's honor. Congratulations to Mac on having the physical strength to accomplish this feat at age 72!

On Saturday, October 13, 1956, while I was working on my lawn and garden at my home in Whitinsville, a car drove up in front of the house and who should step out of it but Allen Pope '07. And did he give me an affectionate greeting! I hadn't seen him since 1927 when he attended our 20-year reunion. He was with some relatives whom he was visiting in the town of Bellingham, Mass., but he came into our home, met Mrs. Nichols, and we chatted for fifteen or twenty minutes. Allen looked "hale and hearty." He has been in the contracting business in Washington, D. C., for many years. Stanley Wires has corrected the statement that appears against his name in the printed list of our classmates that I prepared in July, 1955, to the effect that he is retired. On the contrary, Stanley has an office at 202 Southampton Street, Boston, that he op-

erates under the name of "The Tile Shop," as sales distributor of a line of tiles. His home address is 45 Windsor Road, Wellesley Hills 82, Mass.

It will be only five months from the time when you are reading these notes until June 7 to 9, when we'll be holding our 50-year reunion at Oyster Harbors Club at Osterville on Cape Cod. As of November 14, 1956, when I am preparing these notes, the following men have reported that they fully expect to attend this "event of a life-time": Albro, Ashenden, Christensen, Coffin, Crane, Dodge, Doucette, Frank, Gould, Hud Hastings, Hudson, Lindsay, both Frank and Milton MacGregor, Marx, Moody, Moses, Nichols, Otis, Pease, Pope, Rand, Robbins, Starkweather, Stevenson, Walker. The following "hope" to be there: Arnold, C. E. Baker, Jim Barker, Bragdon, Fales, Garratt, Wheaton Griffin, Knight, Loring, Noyes, Sullwold, Wires. There will doubtless be many others. Are you among them? I hope so. You'll be receiving definite, detailed information from me about this reunion during March or April, with opportunity for definite registration. And if you have not yet mailed me the "Reply Sheet," sent to you last September, with your voting on various matters indicated, please do so at once. And once again, if you haven't sent in your contribution to our Class of 1907 Fifty-Year Gift Fund for the Institute, I hope you'll be not only willing, but glad to mail me your check, made payable to W. A. Hokanson, Bursar, M.I.T. — BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. PHILIP B. WALKER, *Assistant Secretary*, 18 Summit Street, Whitinsville, Mass.

## 1908

Our first dinner meeting of the 1956-1957 season was held at the M.I.T. Faculty Club, Cambridge, on Wednesday, November 7, 1956, at 6:00 P.M. "Bunny" Ames, Bill Booth, Nick Carter, Myron Davis, Leslie Ellis, Sam Hatch, "Winch" Heath, Steve Lyon, Miles Sampson, Henry Sewell, and Joe Wattles attended. As usual, the fellows congregated in the Cocktail Lounge, where, over the "cup that cheers," they discussed summer happenings and news of absent classmates. Wednesday evening is a busy one at the Club, but Les Ellis had arrived early and captured a table for our clan. Chairs were at a premium, but we managed to get enough in due time, so we could all sit down. About 6:30 P.M., we adjourned to our private dining room for the usual fine dinner. After dinner, Joe Wattles showed some of his best Kodachromes, taken on his world tour of last winter. His pictures taken in Central Africa and India were particularly fine. Then followed Kodachromes taken by Myron Davis, who spent last winter in Mexico. He covered a lot of the country by auto and his pictures were extremely interesting.

Our second dinner meeting at the M.I.T. Faculty Club will be held on Wednesday, January 9, 1957, at 6:00 P.M. Try to come, won't you?

Received the following interesting note from Jimmie Burch, from the Rio Rancho Motel, Marysville, Colo., dated October 21, 1956: "Just completing a trip through

the mills in Oregon and California, and leaving for the East today. Our representative out here met me with his car at Portland, so the 1,000-mile trip was not too difficult. The lumber business is suffering from over-production, and many mills are shutting down. It looks as if this is going to be unfortunate for the Republican candidates out here, especially as the Democrats are promising everything under the sun.

"I enjoyed our reunion on the Cape very much, and hope we can get together again next year. Maybe on our 50th we can have the Endicott House for a night, like 1906 had it this year."

The Alumni Fund Drive for 1957 is now under way. Have you made your contribution? Remember that your contribution helps to build up our 50th Year Gift to the Institute. Please do the needed and make it generous. We are sorry to report the death of Richard Y. Kennard in December, 1955, at his home in Chicago, Ill., and also that of Horace Ethan Allen on September 28, 1956, at Toledo, Ohio, following a long illness. — H. LESTON CARTER, *Secretary*, 14 Roslyn Road, Waban 68, Mass. LESLIE B. ELLIS, *Assistant Secretary*, 230 Melrose Street, Melrose 76, Mass.

## 1910

I am writing these notes a week before they are due, as I am taking a short vacation. I do not know where I am going, but I am just getting in the car with my wife and will follow the back roads that may appear promising.

Class news is very meager this month. Jack Babcock calls me up occasionally as Class Agent for the Alumni Fund. Jack is giving considerable time to this job. He is trying his best to raise the Class record of donations above the low level it shows in the records. This summer, Jack spent his time between Maine, where he owns property, and Raleigh, N. C., where his son is a professor in the North Carolina State College.

Dudley Clapp has been to San Francisco recently to visit his daughter and grandchildren. Early this month, I received a copy of a letter to Dudley from Larry Hemmenway. Larry had been reading the June issue of the *Atlantic Monthly*, where he found that Dudley had exerted his literary talent as follows: "A Few Objections Concerning Elections," by C. S. Jennison. "Although I'm told it's better sense (considering the French and all)/For certain U. S. Parties to have parties in Convention Hall,/I dread the coming era of decision and derision/That I must view in movies, print and homes with television./While I respect the struggle for a president-elect./The way I like to view it best is this: in retrospect./I hope whoever runs this time — Ike, Adlai, Dick or Kefauver —/The National Committees will endeavor to be brief over./Although I know the months ahead are certain to be tough,/They won't be too much better if the Parties all get rough./At each four-year fiasco, as the speeches grow more raucous,/I wish I'd never learned to tell a crocus from a caucous."

"Sir: A Benison on C. S. Jennison, by



Dudley Clapp, Cambridge, Mass. Each time the postman cometh with my favorite periodical/I sail through the Atlantic in a manner most methodical/To ascertain if Jennison has wrought another miracle/With clever polysyllables satirical and lyrical./Her lovely, lively, lilting little lines so keen and humorous/Have only one defect: they ought to be a lot more numerous./Among the famous writers from the famous school in Farmington —/Comparisons are odious but she is sure a charming one./This pungent, pithy poetess is naturally critical/Of vocalized verbosity at gatherings political./If wit like hers were only found in politics professional/This nation's favorite reading would be dialogues congressional." — HERBERT S. CLEVERDON, *Secretary*, 120 Tremont Street, Boston, Mass.

## 1911

Another well-deserved honor has been bestowed upon one of our modest, illustrious classmates — Irving White Wilson, XIV, President of Aluminum Company of America — upon whom the University of Pittsburgh has conferred the honorary doctor of laws degree. Congratulations, Bun! His citation reads as follows: "Irving White, scientist, engineer, leader of men, for your lifelong devotion to one of Pittsburgh's most important industries, for your kindness in all relationships with those who work for you, and for your loyalty to Pittsburgh, I confer upon you the honorary degree, Doctor of Laws, with all the rights and privileges pertaining thereto."

Admiral Luis de Florez, II, Retired, has been honored with the presidency of the Flight Safety Foundation, 468 Fourth Avenue, New York 16. F.S.F. is a non-profit organization which has been in existence now for about 12 years and dedicates its work to the reduction of hazards in air travel. Founded right after World War II, by Jerry Lederer, an engineer with the first aviation underwriters' group, primarily to disseminate information aimed to reducing hazards in aviation, the Foundation now publishes bulletins dealing with safety for pilots, flight engineers, mechanics, stewardesses — all aviation personnel engaged either in actual flight or maintenance. Luis sent me a number of samples of the varied publications just in time for me to display them at our annual Class dinner at M.I.T. in early November, and he wrote that the Foundation also holds seminars and is constantly making studies and doing research on future problems. "We believe that we have a tremendous job to do in assuring maximum safety to all users of airspace," is how he sums it all up in his letter.

Your secretary was an invited guest at a Northeastern University luncheon preceding the dedication of a new \$1,800,000 classroom and laboratory building. Northeastern's president, Dr. Carl S. Ell, XI, presided, and Dr. Wilson M. Compton, brother of the late beloved Karl Compton, was the principal speaker. As president of the Council for Financial Aid to Education, Dr. Compton announced that the Advertising Council of America will conduct, without charge, a two-year cam-

paign to enlist public support in the amount of ten million dollars for colleges and universities. He said the need is a minimum of at least a half-billion dollars a year for ten years. Dr. Compton praised Northeastern as a "fortress of freedom of education," adding that it was due to the energetic efforts of its President (our own Carl Ell), "one of the greatest innovators in American higher education." This celebration marked the conclusion of a 20-year program of building, and Dr. Ell told the luncheon group that "it was only the beginning," because anticipated increases in student enrollment mean that the fine plant now housing Northeastern will not long be adequate.

Fred Daniels, VI, vice-president and chairman of the board of Riley Stoker Corporation, Worcester, was one of four new members elected to the exclusive American Antiquarian Society in October. Jim Campbell advises with regret the death of one of his partners, Mortimer Freund, in mid-October, adding that he and John G. Eadie will continue the engineering firm's business as Eadie, Freund and Campbell, at 500 Fifth Avenue, New York 36. Dick Ranger, VIII, president of Rangertone, Newark, N. J., retired in late September as president of the Audio Engineering Society, being succeeded by Walter O. Stanton, president, Pickering and Company, Oceanside, N. Y. This professional organization in the field of recording, transmission, and reproduction of sound in frequencies audible to the human ear, was formed in 1948 to advance the theory and practice of audio engineering and its allied arts.

Professor G. Arthur Brown, X, following a summer school session, has retired as a member of the faculty of the Lowell (Mass.) Technological Institute in its leather department, and returned with his wife, Hazel, to their former home at 858 North Wakefield Street, Arlington 3, Va. "We were both disappointed in not being able to attend the reunion," he wrote, "but it came during our summer school and other activities requiring my presence here in Lowell. Please tell classmates that when they are in the Washington area, look Hazel and me up in suburban Arlington."

A card received in late October said: "George B. Forristall, II, and Richard H. Brown are pleased to announce the partnership of Forristall and Brown Associates, Graphic Arts, with offices at 62 Lenox Street, West Newton 65, Mass." They plan to deal in advertising, letterpress and offset printing, art and layout, and direct mailing. George has a fine background for this type of work, dating back to his many years spent with leading retail stores of the Southwest. Good luck, George! Ed Kenway, XI, for many years with the United Shoe Machinery Corporation in their Boston office, has been retired and his mail address is P. O. Box 192, Newtonville 60, Mass. We have also "located" another classmate, formerly in Brooklyn: Edward Kennedy, III, is now at 15 Ferrante Avenue, Greenfield, Mass. We have two additional address changes: L. Gordon Glazier, VII, Winter Street, Lincoln, Mass., and Edward H. Kruckemeyer, IV, 354 Compton Hills Drive, Wyoming 15, Ohio.

At our annual "Seven Come '11" Class dinner at the M.I.T. Faculty Club, Wednesday evening, November 7, we had 14 Eleveners present, while right next door the Class of 1908 had eleven! We had a most enjoyable get-together and, as usual, the talk proved most interesting and provocative. Just before this, we all stood for a moment of silence for nine classmates who had died since the 1955 Class dinner: Marston, Bierer, Walter Allen, L. D. Wood, Herman, Pearson, Alt-house, Hanson and Colebrook.

John Alter, IV, is still practising architecture in Lawrence, and has been engaged in quite a bit of parochial school work of late, with some residential. He continues to be interested and active in the work of the Boston Architectural Center. He is acquiring color photography as a hobby and had some fine slides of the June reunion to show us. With so many of the classmates now retired, Obie Clark, II, said he was probably the most lazy fellow in the Class, but there's no one to pay him a pension so he's still active in his Nelson Cement and Stone Company in Quincy, which is having another prosperous year, again featuring curbstones as chief product. Clarkie is less active in the Quincy Cooperative Bank, having found appraising work too tiring, but is still a director, and also this year, he is a director of the Quincy Rotary Club, after 30 years as a member.

Marsh Comstock, VI, is enjoying retirement, and he and Helen had a delightful four months at their summer home in Maine, featured by an enjoyable visit from Joe Harrington, VI, and Rose. The Comstock's oldest boy, 32, is advertising manager for Dorr-Alvin Company in Stamford, Conn. The third generation of Comstocks now numbers six. Dennie Denison, VI, continues very happy back in his home town of Framingham as Chamber of Commerce executive secretary, and he and Sara delight in eight grandchildren. He and Roy MacPherson, II, unable to attend on account of a teaching engagement each Wednesday evening, are lining up plans for their own 50-year reunion next June at Framingham High. Henry Dolliver, I, who graduated earlier from Framingham High, like Comstock, is enjoying retirement in its early stages, and he and his wife had four nice months at their camp. They have eight grandchildren, and as soon as Mrs. Dolliver improves from a broken ankle, they're hoping to take a western trip.

A welcome attendee was Ned Hall, II, who is at present back home in Newburyport after many years in Washington in civilian services for the armed forces, specializing in logistics and foreign materiel purchasing. Like the Denisons and Dollivers, Ned and Persis have eight grandchildren. Art Leary, I, retired this year after 33 years of teaching mathematics in the Boston Public Schools. But he couldn't resist the urge, he said, and is now teaching at the Newman Prep School, Newbury Street, Boston. There he teaches, instead of youngsters 15 to 18, veterans from 18 to 30. He said he thought their average intelligence was not much higher than the teenagers in public schools.

As usual, our assistant secretary took care of the dinner details, and manager Bill Morrison served a delicious dinner. Jack looks fine following his gall bladder operation this summer, and he continues to sing the praises of a life of retirement. He still holds a directorship in Boston Edison and at the Lawrence Memorial Hospital of Medford, where he is active on the building committee. He and Mabel have nine grandchildren. Charlie Linehan, I, is still teaching — this is his 45th year at Rindge Technical School in Cambridge! He does plan to retire by the end of this school year, however. His daughter, a graduate of Sacred Heart College in Newton this year, is now studying to be a teacher at the Boston State Teachers College. "Uncle Roger" Loud, VI, another Edison alumnus, said his two boys are getting along famously. The older one has been home with the Lounds while on a sabbatical year from the University of Minnesota, where he now is an associate professor of mathematics. Their younger boy is a research technician at Massachusetts General Hospital. Roger and Esther have six grandchildren.

Morris Omansky, V, is still carrying on a lot of consulting work, primarily on rubber chemistry, and there seems to be more litigation than usual on his agenda. It is fascinating work, he says, but he hopes to retire from this field soon and stick closer to his principal "love," research and development work. He and his wife have five grandchildren.

Carl Richmond, I, lightened our hearts quite a bit by telling us that fortunately he had been able to have a remarkable repair job done on his Zeiss camera, which fell from the tripod at Snow Inn and was badly smashed — lens and housing particularly. His older boy is at M.I.T.'s Lincoln Project, while the younger one is a Lieutenant in U.S.A.F. on active flying service. Both boys are still single. O. W. Stewart, as a member of the board of trustees of Huntington School, says that he is amazed at the little effort many schools are exerting to take care of the growing number of students requiring prep school education. At Huntington, they are engaged in an active campaign to expand their facilities. Under the intriguing title, "It's For the Birds," O. W.'s remarkable work on cultivated blueberries was pictured in a full-page spread in the magazine of the Boston *Sunday Globe* of September 2. He told us the work is most fascinating, and he seems to get deeper and deeper into it. He and Gertrude are 'way out front in this area's 1911 "grandchild sweepstakes," with fourteen!

President Don Stevens sent a message from Ridgewood, N. J., expressing regret at not being with us, but adding they were planning the usual "Welcome to Dennie" luncheon at the Tech Club of New York on Tuesday, January 8. Frank Osborn, III, had hoped to be in Boston the day of the dinner, but unfortunately had to remain at Vineland, N. J., that day on account of a postponed court case at which he was a witness. We would love to have seen you, Frank — try it again! M. J. Lowenberg, VI, phoned at the last moment that he would be unable to at-

tend, and a grandchild's party kept E. J. Batty, II, engaged for the evening. Bill Hodgman, II, wrote from Taunton: "Just commencing a business trip to a number of Midwest cities, which I usually make about this time of year. Please tell the boys 'hello' for me and best regards, as I will not be back before the 9th."

Suren "Bog" Stevens, IV, had hoped to attend, but found at the last minute that he had to be out of town. He is enjoying his construction and architectural work with C. J. D'Amato and Associates, Boston, he wrote. As Gordon Wilkes, II, expressed it: "Sorry that Orleans (on Cape Cod) is so far from the M.I.T. Faculty Club." Aleck Yereance, I, wrote that he and Edna are now back in Arlington, Va., "back in winter quarters," after a prolonged stay at their new summer home in West Harwich on Cape Cod. "The recollections of the 45th Reunion are most pleasant," he concluded.

At this mid-November writing, we've just received a letter from Henry Martin '07, who graduated with us, advising that he and Louis Harrigan, XI, are working as civilians in the Army Engineers' Hurricane Protection Unit at 150 Causeway Street, Boston. It was distressing to learn from Henry that Louis's wife, Margaret — whom we remember so delightfully when the Harrigans were with us throughout the 40-year Reunion at Snow Inn, Harwichport, in June, 1951 — died suddenly at their home in Beverly on September 16. We have assured Louis that he has the deep sympathy of his classmates. Henry added that he is commuting from New Bedford and is now living on Water Street, Mattapoisett, Mass.

When you read these notes, you may possibly have already broken one of your New Year's resolutions — but please don't break that resolution to write to Dennie! Rather, obey it frequently — that's how good class notes evolve. A happy, healthy and prosperous New Year to you all! — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Framingham, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

## 1912

Following the announcement of Clarence McDonough's death, announced in last month's letter, I can give you a short résumé of his very busy life. He joined the Foundation Company immediately after graduating from the Institute and became district manager in charge of operations for Pittsburgh. He was chief engineer for foreign countries from 1926 to 1930. During the two years of depression, he was director of engineering for Public Works Administration. He later served as general manager and chief engineer for the Lower Colorado River Authority, having charge of the Buchanan, Inks, Mansfield, and Austin dams from 1935 to 1940. He then took charge of design and construction of synthetic rubber plants in Louisiana. From 1940 to 1943, he was with the H. J. Ferguson Company of Cleveland, returning to the Foundation Company as vice-president and director. He became president in 1953, which position he held until his death. He is sur-

vived by his widow, Marie DeLaTorre McDonough, and a daughter, Jane Elizabeth.

Erwin Schell, Professor Emeritus of business management at the Institute, has been elevated to the grade of fellow by the American Society of Mechanical Engineers. The citation accompanying his elevation to fellow cited Professor Schell for his "contribution to the science of engineering in the fields of engineering administration and industrial management." This citation also mentioned that between 1935 and 1954, Erwin served as United States delegate to International Management Congresses in London, Washington, Stockholm, Brussels, and São Paulo. During 1944, he was a consultant to the U. S. Department of State, and later served on several missions to Europe for our government. His memberships include the Academy of Management, American Academy of Arts and Sciences, American Management Association, Council of Industrial Progress in Management, and the Executives Club.

May I add a plea for the Alumni Fund. Only 52 per cent of the Class contributed in the 1956 total. While the individual gifts were above average, I feel that everyone should at least make a small contribution. If you haven't already done so, won't you send in a small check? — FREDERICK J. SHEPARD, JR., *Secretary*, 31 Chestnut Street, Boston 8, Mass. LESTER M. WHITE, *Assistant Secretary*, 1230 N.E. 102nd Street, Miami 38, Fla.

## 1913

The national election is over. The whole country likes Ike. Massachusetts, like many of the states, voted very strongly for our President, but otherwise the Republican ticket was defeated, except for our Attorney George Fingold. Our scribe has neglected his classmates during the campaign and devoted his energies to the G.O.P. and its several candidates. Watch us in 1958. The news situation is very meager, and we need your help.

We quote from the Rochester, N. Y., *Times Union*, March 29, 1956: "George A. Richter, one of the first four men to serve in the U. S. Army's Chemical Warfare Service, retired today from the Eastman Kodak Company. Richter, nationally known for his research on cellulose and its derivatives, retired as superintendent of the wood cellulose development division at Kodak Park. He has some 400 patents in his field. His military career began in 1915, when he was in graduate work at M.I.T. . . . After World War I, he remained in C.W.S. Reserve from 1920 to 1925. During World War II, he was an advisor on cellulose and smokeless powder to the War Production Board. As a member of the Office of Scientific Research and Development, he assisted on Army and Navy Problems. His civilian career began in 1925 when he joined the Brown Company in Berlin, N.H. The firm specialized in wood cellulose products, and Richter was director of research and development until 1940. He joined Kodak in January 1941, as assistant superintendent of the wood cellulose development division, with duties related to the com-



pany's paper mill and acetate requirements. He became superintendent of the division six years later. In retirement, Richter, who has traveled extensively in Europe and the West Indies, will travel again as a lecturer in the cellulose field." A very full life, George. We hope you are as happy and busy as I am in retirement.

The city manager of Cambridge, Mass., announces "Draveaux Bender has been appointed as assistant to the city manager in charge of urban renewal, which carries a salary of \$7,200, holds degrees of Bachelor of Architecture, M.I.T., 1913, and Master in City Planning from Harvard Graduate School of City Planning, 1936." The manager says: "He has an extensive career as a planning and housing consultant. . . . During World War II, he served as assistant director in the Division of Standards, Division of Defense Housing Coordination, Washington, D.C. . . . Also he served as War Housing Project planner in the Hampton Roads Area. . . . From 1944-1948 he was planning director of the City of Cambridge. . . . Recently he has been president of The Cambridge Corporation, designers and builders." Good luck, Bender.

In June, the Boston *Herald* makes this statement: "M.I.T. Veterans to Retire, Have 100 Years Service. Three M.I.T. staff and faculty members have retired after a total of more than 100 years service at the school. They are Joseph C. MacKinnon, registrar since 1923; Delbert Rhind, former bursar and assistant treasurer; and Professor Richard D. Fay, professor of acoustics in the department of electrical engineering. Registrar MacKinnon, who will remain as special advisor to the director of the physical plant, was a graduate of M.I.T. in the Class of 1913, and joined the faculty as an assistant in physics in 1915. During World War II, he assisted in directing engineering, science, and management defense training courses. His home is in Brookline." Joe was also the treasurer of our Class for many years, and resigned in January 1956.

Received a note from Arny and Larry Hart ("Have moved to Larchmont Terrace, 2 Washington Square, Larchmont, N.Y."), together with a card showing Larry C. Hart as vice-president (retired), Johns-Manville, now executive vice-president, Junior Achievement, Inc., 345 Madison Avenue, New York 17, N.Y. Larry may be retired, but try and find him when you are in New York. Received a short letter from Warren Gotherman and I quote in part. "We think the choice of Coonamessett Inn was excellent, and the whole affair was well conducted. Our thanks to the committee on their planning and efforts—too bad more of the boys were unable to attend." Warren, did the white marks your wife received ever come out? Thank you and your dear wife for those few kind words.

The Los Angeles *Times* of June 23, 1956, announces another very sad occasion in the lives of us Thirteens: "Thomas J. Rice, head of maps and surveys division of the City Engineering Bureau, died early yesterday in Queen of the Angels Hospital of a heart ailment. Mr. Rice, 3641 W. 63rd Place, was stricken Thursday night while shopping at a market. The City Council in adjourning yesterday

in respect to his memory, said 'Mr. Rice was a man who exemplified all the Christian spirit, and the Council, as well as the City, has lost a valuable friend.' He leaves his widow, Violet, two daughters, Dorothy and Nancy, and a son, Robert. Funeral services are being arranged by Pierce Brothers Mortuary in Inglewood." Yes, we also have lost a valuable friend. The Class of 1913 extends our most heartfelt sympathy to his family.

Geoffrey Rollason as usual has written to us twice expressing his and Marge's appreciation for the great success of our June reunion at Coonamessett. He even states that they are looking forward to another in 1958. Are you? Geoff also attaches an interesting quote from our classmate from down under, "Lammy" Le-maire: ". . . Since writing you at Xmas, Kitty has passed over the Great Divide. Diane, my daughter, arrived back from Europe and U.K. in December early, and Peter got back on Boxing Day. Kitty went to a convalescent home at the beginning of December, and on the sixth of January was sitting up talking to Peter and Diane, apparently very interested in their overseas experiences. She asked Peter to get her cigarette lighter, and he handed it to her; she gave a little cough and died. It was a wonderful way to go out, happy with her children and painless. . . . [But] it was a great shock for me, as I had intended to go to Melbourne at the end of January, and when I wrote Kitty asking if she would like me to come down for Xmas, she answered that it would be better to wait until January. . . . I had to go back after all in February, and had a little break, deep-sea fishing after big game fish in New South Wales waters. We struck awful weather and had very little luck, although the day after I pulled out of the party, my host caught a 179-pound black marlin after a 40 minute battle. Your Uncle Lionel must have been the hoodoo. Up here since I returned, I have been in insurance and stock and share broking, make enough to pay expenses, and every second month disappear to Magnetic Island for ten days fishing retreat. I suppose you have been up to your eyes in Tech reunions during the past few weeks. I received numerous notices, and noted that Alumni Day was a week ago today. I drank a silent toast to all my old friends and regretted that I missed sending a message to the New Coonamessett Inn at Falmouth. I also had a very nice message from Larry Hart on one of the Alumni Fund Appeal pamphlets, and will write him tonight. Truth to tell, it is not easy responding to all the calls that are made when one has reached the retiring age. We never seem to get a letup. I instituted a system for certain activities in which I am interested. In short, owing to the many calls during one's lifetime, my plan was to leave certain multiples of units in one's will. In Australia, I set the unit at ten pounds and have left M.I.T. ten units or roughly 200 odd dollars. By setting a unit, no embarrassment is caused anyone, and they can leave as many units as they like. My solicitors have already been advised of the benefactions, and that is how the matter stands. As I said before, I shall be writing Larry Hart tonight in similar strain and will enclose a

small cheque as a donation this year. I would dearly love to see M.I.T. again, and wish someone would invite me for a lecture with expenses paid and no salary, but that is hoping for the moon. The children are all doing well; Diane in charge of the wind tunnel at the Aeronautical Research Laboratory, and Peter still whacking away in the paper industry. Jim has just been appointed to a fat job in the Commonwealth Attorney-General's Department. No more news now, but God bless you and your good lady, and forgive my long silence. Greetings, Lammy." Note from G.M.R. to G.P.C.: "The 'activities' that Lammy speaks of is a fund on behalf of the sons of men killed in the two world wars—to provide them with scholarships and other aids. It is a worthy objective, and I know Lammy has been very energetic and helpful and is well-thought of in this connection." Many thanks to you Geoff, and to you Lammy, we all salute you for your efforts.

Well, "my hardies," we have submitted to you the bulk of the news pool, and we shall need a more voluminous supply of news, descriptions, or mere mouthings to produce a creditable column for next month. You write it, I shall assemble it, and Tech will publish it. Let's go.

Some changes in addresses: Kenneth B. Blake, c/o Resnick, Johnson Street, Lake Peekskill, N.Y.; Dean Harry L. Bowman, Drexel Institute of Technology, Philadelphia, Pa.; John W. S. Brady, 1411 N. Going Street, Portland 11, Ore.; Allen F. Brewer, 928 Marion Avenue, Fort Worth 4, Texas; A. Lawrence Brown, Apt. 9, 90 Fenway, Boston 15, Mass.; Edward H. Cameron, P.O. Box 13, Southville, Mass.; George H. Clark, 6688 Twinridge, Cincinnati, Ohio; Howard S. Currier, 1090 La Vista Road, Santa Barbara, Calif.; Robert G. Daggett, 3519 South Court, Palo Alto, Calif.; Halsey Elwell, 18 Hia-watha Street, Springfield 8, Mass.; Dr. Paul U. Faragher, 314 Sixth Street, Oakmont, Pa., (retired); Lawrence C. Hart, Apt. 7-E, 2 Washington Square, Larchmont, N.Y. Until February, as ever.—GEORGE PHILIP CAPEN, *Secretary-Treasurer*, 623 Chapman Street, Canton, Mass.

## 1914

Your assistant secretary had the pleasure recently of meeting, accidentally, the wife and youngest daughter of Lou Wilson, who passed away a few years ago. Some of you who may have known his family in the past may be interested in the fact that, after bringing up and educating six children, including two sons who graduated from Tech in 1940 and 1942, Mrs. Wilson was encouraged by Lou to continue one of her early interests, namely, painting. After some years of association with the Art Students' League in New York, she has just been accorded the honor of a one-man show at a well-known art museum. This is something of which we all know Lou would have been proud. Our best wishes go out to Mrs. Wilson. We are glad to recognize her as a Class associate and one who is carrying on in the best traditions of 1914.

While recently in San Francisco, your secretary had the pleasure of visiting Ed Hayward. For many years he has been



associated with the Production Management Engineering Associates, Inc., doing business in the principal West Coast cities from Vancouver to Los Angeles. Ed modestly admits that for many years he has been president of the company. His company is currently expanding its activities to the Far East, particularly in the Philippines. As Hayward is the principal partner of the company, and in perfect health, he is not contemplating retiring, as have many of our associates. While each five-year reunion has made him plan to return to the East, it just has not been possible. Ed hopes, however, that any Fourteener visiting San Francisco will visit him in his offices on Montgomery Street. He said that Frank Ahern did make it on one of his West Coast trips.

Belated word has just been received of the death on May 2, 1955, of John Sokoloff of Course VII. Our last information indicates that he was most recently employed as assistant to the plant manager of E. R. Squibb and Sons of New Brunswick, N.J. The condolences of 1914 are extended to members of his family. — H. B. RICHMOND, *Secretary*, 275 Massachusetts Avenue, Cambridge 39, Mass. H. A. AFFEL, *Assistant Secretary*, 120 Woodland Avenue, Summit, N.J.

## 1915

What a Class! Where would you find 34 classmates and their guests braving the threat of a New England storm on November 2 to go to a Class dinner at the M.I.T. Faculty Club? They were all there for a pleasant evening. Our outstanding guest was Don Severance '38, secretary of the Alumni Association (guest of Carl Wood), who told us about Alumni and Institute affairs and the part 1915 has so admirably contributed. Clive and Max reviewed the 1955 Alumni Fund Report and joined with Jack Dalton in explaining plans for our Fiftieth Capital Gift Fund, of which Ben Neal will be chairman. Jack, having been working closely with Ben on these preliminaries, told of our hopes and plans for this gift in 1965. Ben had planned to be with us but just couldn't make it. However, loyal as he is, he came in earlier, solely to meet with the committee of your Class officers, and George Rooney, and Wally Pike to get this campaign organized. Then he wrote:

"You fellows who are hanging around Boston all the time can't imagine what a pleasure it is to get back and look over the old familiar scenes, and get a real breath of salt air! I think that at the luncheon with you fellows last week, I really obtained much more than salt air, but a real inspiration for the Fiftieth Fund of 1915.

"Life has dealt unevenly with our gang of 46 years ago; many, as we all know, have already gone to their reward. Somehow or other it seems to tighten the bonds between those of us who remain, and one objective, which is profoundly inspirational, is the 'Fiftieth Fund for 1915.' No matter what any of us can give, be it large or small, I feel a tremendous confidence in the loyalty, good fellowship, and devotion of those of us who have stuck together so long, and I look forward to every last one of us coming in on this

worthy goal. Wish I might be with you on the 2nd, but I hope your deepest drink and worthiest toast will be for the Class Gift."

When you read a letter like that you can fully appreciate that we have the right man for this job in Ben, a devoted, loyal, sentimental son of M.I.T. We know Ben and his committee will put this over big. To you classmates whom Ben invites on this committee, all honor and glory to you for your interests and efforts.

Present were: Louie Young, Max Woythaler and guest Lou Clements, Carl Wood and guest Don Severance '38, Fred Waters, Ed Sullivan, Henry Sheils, Jay Sindler, Al Sampson, Pirate Rooney and guest Bob McCormick, Wally Pike, Charlie Norton, Frank Murphy, Pete Munn and guest Werner W. Staaf, Archie Morrison, Azel Mack and guest Jim Hoey '43, Ernie Loveland, Larry Landers, Clive Lacy, Wink Howlett, Loring Hayward, David Hamburg, Sam Eisenberg, Fannie Freeman, Dinger Doane, Jack Dalton, Bill Campbell, Evers Burtner, Whit Brown, Bill Brackett.

We all welcomed the "long time no see" mates — Bill Campbell, Ernie Loveland, Louie Young, Dinger Doane, and Evers Burtner, brave to come after his recent hospitalization. May we see them all at the next dinner. Those five guests are really no strangers. They all come to every dinner (this was Don's first) and are considered "regulars" among us. Do come again, you all!

Now, our valuable long-distance prize(?), always hotly contested for, brought out a close fight this time. The regular competitors for this trophy(?) will henceforth have to be classed as mere suburbanites. Whit Brown, Concord; Loring Hayward, Taunton; Max and Lou, Framingham; Al Sampson, Beverly; Fred Waters, Marblehead; Archie Morrison, Swampscott. For the photo-finish, brought Charlie Norton, Martha's Vineyard, and Ernie Loveland, Marion (not a girl's name, but a town on Cape Cod), to the wire, nosed out by Bill Campbell, the winnah from New York City. And Bill entertained us with his usual funny stories. Pete Munn showed up with his left arm in a sling (no questions asked nor answered), but he could still bend the other elbow. Frank Scully, and several others who usually attend but could not come, sent notes of regret, which we read. What a Class!

From East Middlebury, Vt., Doug Baker wrote: "I retired July 31. Our place is in the township of Salisbury (telephone Fleetwood 2-4228), but we are near East Middlebury, so we get our mail there. In the summer of 1936, after returning from a 15-year sojourn in Europe, we looked for a summer home, and this is where we landed. It is a small house, but flexible, and routine procedures permit us to expand or contract our sleeping accommodations and welcome our friends and relatives. We have not made any probability studies, but to date, busy season traffic has not exceeded our provision for it. Over the years, the house has been equipped with what are known as modern conveniences, though we could still get along if the power circuit went out. I have to say that our land has not been kept up or im-

proved in the same way. In consequence, there are an infinite number of projects for the entertainment(?) of our more active visitors. So far, my wife and I have been kept very busy without undertaking any agricultural operations. I wish I could attend the Class dinner in Cambridge on November 2, but I have to be in New York the last week in November and cannot manage more than one trip during the month. Kindest regards and best wishes to you all." All the best to Doug and Mrs. Baker to enjoy a long, happy, successful retired life. I'm sure any classmates up that way would be glad to see them, but not too enthusiastic about that entertainment (?) he offers.

Sam Eisenberg, Architects and Engineers, 739 Boylston, S. Boston 16, keeps busy and writes: "My son Herbert has joined my organization, and the City of Boston has just awarded me a contract for architectural-engineering services for the preparation of plans for the biggest parking facility in Boston. It is to be located in the block embracing Kingston, Bedford, and Columbia Streets, and will house almost 800 cars, and the project will cost about two million dollars. Good luck, and I will be seeing you." Good luck, Sam, and keep up your good work.

In the October 8, 1956 issue of the *American Dye-stuff Reporter*, reporting the proceedings of the American Association of Textile Chemists and Colorists, Alton Cook, technical director of Arkansas Company, Inc., Newark, N.J., has an article "Silicones in the Textile Industry," a paper he had previously presented in April at an Association meeting in Raleigh, N.C. Ray Jacoby '10, and Al Sampson '15, are retiring president and treasurer, respectively, of this A.A.T.C.C.

So, want notes like these again next month? Then "help Azel" and write something about yourself, your family, your job, your retirement. Help! — AZEL W. MACK, Apt. 26A, 100 Memorial Drive, Cambridge 42, Mass.

## 1916

It's easy to keep track of Bob Wilson — just watch the financial column of your favorite, or almost any, newspaper. For example, in the *New York World Telegram and Sun* of October 18, we saw Bob's genial face looking right at us, and alongside were captions and quotes of real wisdom regarding private enterprise. At an oil progress-week luncheon, Bob, as chairman of the board of Standard Oil Company (Ind.), said that the oil industry spent more than five billion dollars in 1956 on a new plant and equipment, that this outlay was made necessary by consumer demand for more and better petroleum products, and that most of this investment would be financed out of oil companies' profits. A modern refinery costs about \$1,000 for each barrel of capacity, he said. It costs an average of \$100,000 to drill a wildcat well today, he went on, and last year 88 per cent of the 8,100 wildcats drilled produced no oil. Then he asked: "Can you imagine the government engaging intelligently and efficiently in a wildcatting operation? Can you imagine the secretary in charge of oil having to explain to a Senate committee why he drilled

in the 88 per cent of the places that proved to be dry? Or, more likely, why he did most of the drilling on the farms of his political friends?" Significant questions, we'd say!! On the technical side, Bob was only recently given high recognition in his appointment by the President to a six-year term as one of the nine members of the General Advisory Committee to the Atomic Energy Commission. This is something that he says will make him brush up on his physics. We understand he averages about one speech a week; in October he and Joe Barker were at the speaker's table for the Charles F. Kettering Award by the Engineering Societies, which this year went to Mr. Kettering himself. In a note, Bob mentioned that he and Mrs. Wilson were celebrating their 40th wedding anniversary in December — there are three married daughters and eight grandchildren to help them celebrate.

Word from Earl Mellen says that the big event in the Mellen household is the birth of their eleventh grandchild — a boy, who arrived October 6. Notice: Who can beat eleven? Emory Kemp ties eleven. All contestants please notify your secretary, and the results will be tabulated and reported in an appropriate later issue! Earl goes on to say: "Since the reunion, I have met a couple of our classmates and have reproached them for not attending. I am sure if each of our classmates will do likewise, we will have a larger attendance next year." This is a *real* plug for reunions, for Earl openly acknowledges that this was the first reunion he has attended in all these years and he doesn't know why he missed the ones in the past. He adds: "So far as business is concerned, it just seems as if there are so many things to be done each day, and it isn't possible to accomplish all of them. I am finding it more necessary than ever to refuse requests for my services in the various activities around town."

A brief one from Stew Rowlett: "I certainly appreciated the group picture taken at the 40th reunion. It is an excellent picture and will be cherished. You ask for a couple of paragraphs giving comments or notes regarding items of interest at the 40th Reunion. I can't think of any particular thing that stood out except that I enjoyed it more than any previous one because I remember more of it." A note from Frank Chandler indicates that the reason he did not get to the reunion was that his daughter graduated at that time from the University of Colorado. Frank says that he has been trying to raise French poodles, so if anyone is interested in puppies, they can contact him at Box 92, Marblehead.

One thing we never did report was an item about Willard Brown — something he didn't make any special to-do about at the reunion. But we understand that in May he was re-elected first vice-president of the Cleveland Engineering Society at a meeting of the Board of Governors at the Society's quarters. The formal notice mentioned that he holds degrees from Virginia Military Institute and Harvard, as well as from M.I.T., and that he is a member of the Illuminating Engineering Society and the International Commission of Illumination. He is manager of application

engineering, NELA Park, General Electric Company.

Speaking of Willard Brown and the reunion, a letter from Walt Binger says that he never enjoyed a reunion more than our last, and that he "received from Willard Brown a colored print of Howard Green and myself at the tiller of a little sloop which we sailed around the inland waters — a nice memento of the reunion. Since seeing you all, I have been in Iran again as I had expected — a fast trip accompanied by some geologists of a big American mining company. This time I left the uplands to go to the southern fringe of the great Persian Desert (temperature 104° at 1:00 A.M. in my room). It was very interesting and on the whole agreeable."

Through the special efforts of Chuck Loomis, our Class was in for a special mention in the 1956 Annual Report of the M.I.T. Alumni Fund. In the Report of the Chairman we read: "The work of the Special Gifts Chairmen was recognized when Charles W. Loomis, who holds that post for 1916, was cited for the greatest amount from the 'special' list of any class; \$7,300." For 1916, the total Class giving since the start of the Fund was reported as over \$74,000, and the average contribution, \$134.

We had a letter recently from Freeman Clarkson from Santa Monica, Calif., where he had gone because of the illness of his daughter. Freeman retired some time ago to what was once a farm in southeast Vermont — Newfane, to be exact. He has four granddaughters in California and two grandsons in New York. (Speaking statistically, this would appear to be above the class average.) In his letter, Freeman indicated that his pet peeve at the moment was the poor deal given our American Indians. He suggests that those who object to this country following Russia's example in breaking treaties and denying people their rights should write their congressman and senators before the next session.

Back in October, we asked Joe Barker to give us a little accounting of his activities over the past year. His story is so interesting that we are reproducing some substantial chunks of his reply: "When attending the Fourth Convention of the Panamerican Union of Engineering Societies in Mexico City, I met Jack Camp at a dinner of the Mexico Section of A.S.C.E. We spent several days together, including a trip to Toluca, where Jack had his dogs entered in the famous Mexican Dog Show. Jack has a most successful engineering firm which enjoys the highest reputation in Mexico. In fact, he had too much business on his books requiring his personal attention to permit him to fly up in his private plane to the Cape last summer for our 40th. He assures me he will be up soon and make one of our interim informal reunions. I am just about finishing my term as president of The American Society of Mechanical Engineers, and have just been elected for 1957 as president of Engineer's Joint Council — an organization of all the engineering societies of the U.S. This will not require as much traveling as I have had this past year, when I have been in nearly every state of the Union. It has been a wonderful experi-

ence, my only regret being that my visits have been so short in each city and so filled with official engagements that I have had few opportunities to contact our 1916-ers. Last July, I made a rush trip to Europe (only 15 days out of the U.S.) to represent A.S.M.E. at the Fifth International Conference on the Properties of Steam held in London. I had a pleasant week end in the north of England with my company's British associates, and another in Germany with the U.D.I. (German Engineering Society)." Joe went on to say he was attending meetings in London, Ontario, and in Boston, and finally, in the last week of November at the A.S.M.E. annual meeting in New York, he was to turn over the presidency to William F. Ryan of Stone and Webster Engineering Corporation. Joe indicated that, in January, he was retiring as president of Research Corporation, but will continue active as chairman of the board. He has held both positions for the past 12 years, so transferring his administrative responsibilities will give him time for some relaxation.

A recent issue of *195 Broadway*, a publication of the American Telephone and Telegraph Company of New York, showed a picture which had a continued resemblance to a bright-eyed picture that we all saw way back there in the 1917 *Technique*. Under the picture was the caption and summary: "Maurice E. Strieby, Public Relations, 40 years, July 27 . . . lecture manager and managing editor of *The Bell System Journal* . . . received degrees from Colorado College, M.I.T. and Harvard . . . joined New York company as engineer . . . was engineer at A.T. and T. from 1919 to 1929 . . . at Bell Labs until 1940 . . . moved to Long Lines for engineering and staff assignments . . . came to "195" in 1951 to direct technical demonstrations . . . civilian consultant to Secretary of War, 1942-44 . . . is author of 18 patents . . . member of many technical and civic associations . . . Mr. and Mrs. Strieby live in Millburn, N.J." Shortly after this published notice, Maurice joined the ranks of the retired. It is of interest to note that he is a Fellow of the A.I.E.E.; senior member, I.R.E.; member and former director, New York Electrical Society, and Fellow A.A.A.S. He received the Presidential Certificate of Merit for service in World War II, and was awarded the honorary degree of D.Sc. from Colorado College in 1946.

We regret very much to report that we recently received a notice from the Alumni Office indicating that our classmate Jack Hepinstall had passed away on April 27, 1956. We have written to his family expressing the sympathy of his classmates.

On a stop over at the Denver Airport, your secretary had a nice chat with Murray Graff. Murray retired from the General Electric Company in December 1954. In April of 1955, he took over the managing director's position with the Denver Safety Council, a chapter of the National Safety Council. In the current year, this safety council was expanded to take in three outlying counties, and the name has been changed to the Metropolitan Safety Council. He says that it is much more difficult to sell the intangible item of safety than to sell turbine generators.



Herb Gilkey was recently given "The Society's Highest Honor" — an honorary membership in the American Society for Testing Materials. There was a most interesting write-up about Herb's career in the July 1956 issue of the *A.S.T.M. Bulletin*, but we want to give a much more personal story — a letter we have just received from him in response to a request that he tell us about it. He writes: "Thank you for the welcome communication; also for the splendid 23-man group picture of a 1916 get-together in New York last December 8. For the all too few whose paths have, during the past 40 years, crossed with mine, the picture is excellent — except for some half dozen indistinguishables back near the 'wood nymph' on the wall, one of whom is yourself. Posted in my office is the 1951 35th reunion group photo, and this one, like the one you sent, shows an extremely interesting assortment of mature substantial appearing faces resting on the shoulders of men whose records of achievement give substance to the face appraisal. At long range, and with virtually no personal contacts, I have nevertheless been able to follow many of the interesting 1916 career highlights through the technical press, and *The Review* — especially the 1916 notes which, after a period of hibernation, did (notably under you and Ralph) make a healthy sustained comeback. One is always, for example, running into the escapades of Bob Wilson and Joe Barker; two of the latest being Bob's Washington Award — a very great recognition — and Joe's A.S.M.E. presidency — but then, these two guys are always up to that sort of thing. We all remember them as 'rather queer' way back prior to 1916. Some folks never do seem to outgrow their peculiarities. Walt Binger's name crops up occasionally. I recall something of his wartime Atlantic crossings, and for me, through A.S.T.M. circles among others, your own name has often been in evidence, but not within my own area of specialization. Then there are the Freeman 'twins,' and virtually all the others. I've felt that in fields of successful, worthy endeavor, M.I.T. 1916 measures up to any of them, even though each of us individually happens to have his attention drawn to only a few specific facts about fewer specific individuals. My sheltered academic existence has to me been rewarding and satisfying but certainly not newsworthy. Have taught, researched, and written (about 150 papers, discussions, and a few books and parts of books — largely of specialized limited appeal). Among the high spots (to me) have been: my six months in Paris with Hoover following World War I; membership on the Third Joint Committee on Concrete and Reinforced Concrete (1940 report); membership on a special board of consultants on the concrete problems of Hoover Dam, 1931-1933; vice-presidency of the A.S.E.E. (American Society for Engineering Education), 1943-1944; presidency of the American Concrete Institute in 1949, and now this highly valued recognition at the hands of A.S.T.M. to which you alluded, and which I am still at a loss to rationalize on the basis of any adequate performance or contribution on my part. Am just hoping that A.S.T.M. doesn't

discover and decided that 'it was all a mistake.' My teaching connections embrace Illinois, 1921-1923; Colorado, 1923-1931, and Iowa State, where in 1931, I came to organize a department of 'T. and A.M.' — whatever that stands for — and retired a year ago from the 24-year headship. Am now a plain professor. As stated, the academic life has, along with the various technical sidelines, been all and more than I might ever have hoped. One standing drawback has, however, been the non-feasibility of ever being able to cut loose in early June. I have earned degrees from four institutions — the first in 1911. Never within this 45-year period has there been an attendance at a Class reunion. Moreover, the little matter of two-coast geography has practically precluded personal contacts with classmates. In spite of the fact that I have, as regards class-note contributions, until now played only the spectator's or laggard's role (and shall probably for the continued lack of anything interesting to say, settle back to more of the same), I do nevertheless highly value and thoroughly enjoy the news that you and Ralph so faithfully dig up and disseminate. Just because your 'appeal in passing' opened a spigot that kept running, please don't feel under obligation to publish all, or even any part of this. Again thank you for the picture and the letter, and greetings to all." Thanks, Herb, and congratulations indeed for the new honor from A.S.T.M. — well deserved, I know, as a member myself for 27 years. [Sec.]

We understand from Dick Berger that a series of articles, under the title "Cancer Because," based on his as yet unpublished book manuscript with the same name, started in the August 1956 issue of *Nature's Path* (a health publication available at 25¢ a copy at health food stores and some news stands). This will continue to run for a number of months. Dick mentions that in the September issue he offered to send additional free information on the subject of cancer prevention to all interested, and in the first two weeks thereafter he received some 57 letters and cards requesting literature.

Well, that about does it for this time. Your secretary appreciates the generous response so far to requests for news for the column, but asks each of you to consider acting spontaneously and sending in any news or notes that you think would be of general interest. As a personal item, he notes that, as of the first of November, by action of the Board of Trustees, he was made honorary professor of Statistical Quality Control of Rutgers University. So — send in your homework to: — HAROLD F. DODGE, *Secretary*, c/o Bell Telephone Laboratories, Inc., 463 West Street, New York 14, N. Y.

## 1917

Bob Mulliken, physicist and expert on the spectra of molecules at the University of Chicago, was recently named to the Ernest DeWitt Burton distinguished service professorship. This is one of a limited number of specially-named chairs at the University awarded for distinction in scholarship or science. Penn Brooks was recently elected a director of the Ameri-

can Management Association, a 23,000-member national management education association.

Newman Marsilius, Sr., died October 17, 1956. A pioneer in the milling machine field, he served as president of the Product Machine Company, Bridgeport, Conn., from 1928 until 1949, when he became chairman of the board, a position he held until the time of his death.

Ray Blanchard writes: "I have had a most interesting 39 years with the Hood Rubber Company, a division of the B. F. Goodrich Company, Watertown, Mass. I started as a chemical engineer in the laboratory, and for 22 years served as vice-president of manufacturing. Since 1950, I have been president of this division. I am still able to play golf, and since my home adjoins the second fairway of the Bellevue Golf Club in Melrose, it doesn't take much urging to get me out on the course. That seems to be the extent of my athletic activities. The past two winters my wife, Evelyn, and I have spent a very restful vacation in Scottsdale, Ariz. (no, I didn't attempt to ride a horse), and we get away to Dennisport on Cape Cod in the summer. My son, Donald, is a graduate of the Bentley School of Accounting and is working for a firm in Somerville. My daughter, Beverly, is married to a graduate of Tufts University (couldn't seem to find an M.I.T. man to suit her). So now, when things get a bit dull, we have four grandchildren to liven up the atmosphere for their grandparents."

Bill Ogrea says, "My principal reason for not partaking in the '17 activities is that my sojourn at Tech was only for half a year, and in that time very few acquaintances of any standing were formulated. Illness compelled my dropping out at the end of my first semester so that I could help out at home. Eventually, my steps led into teaching of business subjects in the Boston public high schools, a line more adapted to my talents than engineering. The only name that registers in my mind of the '17ers that I know is 'Brick' Dunham, who was at Andover when I was going there. There may be another Andover mate, or two, however. Perhaps when I go to Andover for my class reunion I may also get to Tech. I am retiring from school duties in June, 1957, and will then go to Florida."

Claudius H. M. Roberts, late Colonel, U. S. Army, has now retired permanently from uniform and is an executive of the Pass and Seymour Company of Syracuse, N. Y. After a tour of Army duty in Japan, he leisurely proceeded home westward, thus completing a circumnavigation of the globe. Along the way, through India, the Middle East, and all over Western Europe, he shot 16 millimeter film at an approximate rate of one foot per mile traveled; and from this celluloid abundance he promises to patch together a two-reel thriller for showing at the 40th Reunion. — RAYMOND STEVENS, *Secretary*, 30 Memorial Drive, Cambridge, Mass. W. I. McNEILL, *Assistant Secretary*, 270 Park Avenue, New York City, N. Y.

## 1918

From the heat of decisions, action, and sweat which accompanies the delicacy



and force of Bill Wyer's office in East Orange, comes a refreshing communication from the boss himself: "Our rush of work has come because railroads are thinking more about consolidation than they have in many years, and everybody who thinks about it seems to want us to help in working out their plans for consolidating. We spent most of 1955 on the Milwaukee and North Western and are now working on the Great Northern-Northern Pacific-Burlington, and also on the Lackawanna-Erie-Delaware and Hudson. We are also working on the reorganization of the Florida East Coast and on a freight rate divisions case for the Bangor and Aroostook, not to mention two or three other smaller jobs. I have to turn my different compartments on and off like an electric light, but I seem to be thriving on it and still have to struggle to keep from gaining too much weight."

Courtesy of Editor Dudley of The Review (whose manifold courtesies help to spark many a class secretary into something of a minor firebrand), I have a Hastings House advertisement of Sam Chamberlain's books. There are now at least 32 in all. Most of them cost \$5, but you can get *A Tour of Old Sturbridge Village* for \$1, or go all out for a numbered copy of the deluxe edition of *Tudor Homes of England*, with morocco gilt top, for \$45.

Al Grossman has recently taken flight from the industrial grime and tumult of Boston to whatever should be the proper adjectives describing Montreal, where he has a branch factory also making rubber products, and naturally that can stretch quite a way. Our understanding is that he and Mrs. Grossman had a bit of a vacation in the bargain. According to Bill Wills and Max Seltzer, our John Kilduff of Amesbury Metal Products Company, has done a fabulous job for the Alumni Fund. John is one of 1918's top enthusiasts. Max has an adorable, coal black, miniature French poodle named Satan. From the harpist of the Houston, Texas, Symphony Orchestra has now come another miniature poodle to Max. This time named Ariel. Taken all in all, the names and the harpist are entangled in a lovely classical regard for appropriateness. If memory serves, and it does because I have just looked it up, John Milton used Ariel for the name of one of the fallen angels in *Paradise Lost*, thus going in one dizzy plunge from harps to Satan. Needing to arise at six in the morning to housebreak the new puppy may have led Max at times to address her by the generic name of her sex.

On November 6, I had the bright and precious experience of eating dinner with Jim Flint, who flew to Boston from New York for the occasion. He reminded me that 40 years before, to the day, a trolley had been driven into an open drawbridge by the South Station, killing many people. I remembered the incident but would have guessed it happened about 20 years ago. Thus does time change perspective. After serving as a four-striper commanding the Naval Ordnance Plant at Forest Park, Ill., (torpedoes) during World War II, Jim got away from it all by building a summer place about 40 miles north of

West Yellowstone. That takes you into Montana to the Gallatin River, which is part of the headwaters of the Missouri. From this part of God's country, Jim can hunt elk, deer, bear, and moose, but mostly he just fishes. How that aroused the endearing memories. We both got the flavor of old and happy far-off things by recalling July 4, 1920, when we stood hip-deep in the cold water of the Colorado River as it comes out of Grand Lake. Around us, literally hundreds of trout were jumping, but neither of us got a single bite all day. Our reward was fellowship and a memory to cherish. And of course we talked about the old college days. Nobody could teach mechanism as well as Charlie Park, or applied mechanics to match Addison Holmes, or German in the same league with dear old Blackstein, or chemistry with a pink in his buttonhole like Henry P. Talbot. Remember how Meister always looked as though he smelled something burning? Remember Passano's spats (over sneakers sometimes), and Drisco's shaggy hair with full beard? Wasn't that something! E. B. Wilson had the whiskers but not the full thatch on top. And D. C. Jackson had a shiny pate which compared well with Cecil Peabody's or Robert P. Bigelow's, or Charlie Cross's. Well, Jim is now vice-president in charge of engineering and development for the Jeffrey Manufacturing Company of Cleveland, Ohio, making coal mining machinery, and digging in my own individual way, without benefit of much mechanical assistance, I am—F. ALEXANDER MAGOUN, *Secretary*, Jaffrey, N. H.

## 1919

We received a newsy card from Aubrey Ames this month, in which he tells us that he "spent last winter on a trip around South America, and the past four months on our so-called 'farm,' raising not much besides a few blisters." Aubrey goes on to say: "In June, had a visit from Malcolm McKinley (Mac), 35 years a resident of Florida, and spent three days trying to show him how much better California is. In case he is too modest to tell you, he is vice-president of the Tampa Electric Company, and president of the Tampa Kiwanis at the present time. This winter, the roaming habit will take us to Mexico for three months. There is nothing like foreign travel to make one appreciate what we have here at home in the U.S.A."

Harry Cikins writes that he is "life insurance consultant with Metropolitan Life in Boston, trying to provide sound estate planning for widows and orphans. Have two sons with Harvard master's degrees; one with Social Security Board, the other legislative assistant to Congressman Brooks Hays. Each one of them is devoting part time to Ph.D. work in political economy and public utilities."

As all of us have been immensely concerned over the tense world situation, particularly during the past month at this writing, and it was good to see Oscar A. de Lima's name attached to a letter to the editor of the *New York Times*. Oscar is chairman of the board of directors of the American Association for the United

Nations, and the letter, which was also signed by Eleanor Roosevelt and Clark M. Eichelberger, strongly urged our Government and Representatives "to keep the Suez question before the United Nations until a settlement is achieved," and "to evince no hurry to be off, no impatience to leave this world forum for other places and matters." The letter went on to point out that, "This is a fateful test, not of the United Nations itself, but rather of the intentions and the dedication of the United States and the other nations of the world of their faith in the principles they have proclaimed in the Charter and of their commitment to the obligations they have undertaken."

We are expecting a fine turnout for the Class dinner here in New York on November 20, and hope to have some announcements re our 40th Reunion. Sorry to hear from C. J. Farist that he won't be with us, due to the fact that he's still taking it easy since his coronary attack on August 3. George Fleming sent regrets also, and also the news that his physical handicap has caught up with him and that he has had to retire. He plans to continue living in Washington for the next few years.—EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 385 Madison Avenue, New York 17, N. Y.

## 1920

Your secretary had a very pleasant visit recently with Foster Doane at his lovely home in Neenah, Wis. Foster is vice-president and production manager of the Bergstrom Paper Company at Neenah, and it is evident from a trip through the mill that he is doing a magnificent job. He and Mrs. Doane told me they were again going to visit Frank Badger's resort motel at Hollywood Beach, Fla., this winter because they had such a good time there last winter. If any of you are in Florida, it might be a good place to keep in mind.

It is with sorrow that I must report the death of Grant French, who was living in Valparaiso, Ind. No further information is available at this writing. He passed away on October 26.

Will Boyer is now in Albuquerque, N. M. Bob Bradley now resides at 985 Memorial Drive, Cambridge. A. H. Castor has left Manchester, N. H., and gone to Fort Lauderdale. John Hale is now in Portsmouth, N. H. Captain Russell S. Hitchcock has returned from Holland and is living in Melrose, Mass. Another classmate who, like the birds and an increasing number of his fellow classmates, flies south for the winter months is Gavin Taylor, who has gone from Montreal to St. Petersburg, address 201 Catalan Boulevard.

The Norris Greenleaf Abbotts recently celebrated their 30th wedding anniversary, and I am told that his best man, Buck Clark, was there for the occasion. Norrie has been appointed chairman of the Alumni Fund for the Providence area, and he in turn has appointed Johnny Nash as one of his vice-chairmen, and also hopes to secure the service of Dorothea Rathbone for this worthy endeavor. As you are all aware, Al Burke is our Class agent for the Fund, and has done an outstanding job. Do give him your very best

cooperation and support. — HAROLD BUG-BEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

## 1921

Sincere good wishes to you and your family for a very Happy New Year!

Celebrating the New Year 'way down yonder on the Colonial Plantation in Leesburg, Ga., is our own beloved Class agent, Squire Ed Farrand, who has much to celebrate as a result of another of his (and your) fine performances in the interest of the 1955 Amity Fund. As Ed wrote to you in his recent letter, the 1921 total amount is 23 per cent greater than last year, and the average contribution is up 32 per cent. The annual report on the Fund lists the Class of 1921 as the 25th, in numerical order, of the 60 individual classes contributing. Our "active" Class roll, numbering 609, is tied with the Class of 1925 as the 27th in size, while our 218 contributors constitute the 19th largest group. Representing 36 per cent of the Class, this group is in a four-way tie for 23d place, percentage-wise, and only slightly above the average of all contributing groups of 31 per cent. The total amount we contributed as a Class is 18th in size, and our average contribution is in 27th place. The grand total of our giving during the fifteen years the Amity Fund has been in existence is the 15th largest amount.

This is a record of which you and Ed may well be proud. It is showing steady improvement, and Ed's fondest hope is that you will continue to help better it in each succeeding year. For Ed and for all of your Class officers and committee chairmen, thank you for your splendid help—for Technology and especially for the 53 outstanding young men who were thus able to obtain scholarship aid to enter the Institute last fall. If you haven't already sent in your contribution for this year's Amity Fund, please do it now as a New Year's greeting for Ed Farrand.

As you know, Mich Bawden has accepted the appointment as Special Gifts Chairman for the Class of 1921. Sumner Hayward is also serving the Amity Fund as one of the original Regional Chairmen, covering the area surrounding his home town of Ridgewood, N. J. The Fund report also lists a separate gift from Irving D. Jakobson, in continuance of the scholarship which he established several years ago in the name of the Jakobson Shipyard, Inc. Another gift goes to the maintenance of the scholarship fund which was established many years ago in memory of the late John A. Grimmons.

The Admissions Office analysis of the Class of 1960 at the Institute reveals that nephews of two 1921 men entered last fall. Lee J. Alter of Yonkers, N. Y., is the nephew of Henry A. Alter, general superintendent of the Benrus Watch Company in Waterbury, Conn. Philip Fauchald of Minot, N. D., is the nephew of Alexander M. MacMorran of Boxford, Mass., skipper extraordinary as well as general manager and treasurer of the Iona Supply Company.

Through the courtesy of Harold Bugbee, secretary of the Class of 1920, we

have word of Henri P. Junod. Says Harold: "I thought I would pass along a bit of news from your distinguished classmate, Harry Junod. I got a letter from Harry the other day. Since leaving M.I.T., he has been associated with Pickands Mather and Company of Cleveland, Ohio, the company that mines iron ore for Bethlehem Steel, Youngstown Sheet and Tube and other companies; that operates a fleet of 35 boats; that is in the pig iron business and the dock and coal business. Harry worked in the blast furnaces and then sold coke and pig iron in various parts of the country. About 12 years ago, he came back to Cleveland to head up the coal department and was subsequently made a partner. He is married and has a boy 12 years old. His business address is 2000 Union Commerce Building, Cleveland. You will remember Harry as an outstanding track star as well as a delightful personality." Many thanks, Harold.

Admiral Joseph W. Fowler, U. S. Navy, retired, was in charge of the entire construction of Walt Disney's Disneyland, and has been made general manager of this world-famous park. A graduate of the Naval Academy who received his master's degree with us in Course XIII-A, he served the Navy for more than 30 years, most recently as director of the Industrial Survey. Andrew Deane, vice-president of United States Steel Homes, Inc., of New Albany, Ind., was the commencement speaker at Thayer Academy, Braintree, Mass., last June. Andy prepared for the Institute at Thayer. The March, 1956, issue of *Dun's Review and Modern Industry* contains an article by Saul M. Silverstein, entitled "Five Areas for Management Reappraisal," covering unions, Government, security, taxes and tariffs. Saul's Rogers Corporation has announced the acquisition of Cellular Rubber Products, Inc., which has become the Willimantic, Conn., Division of Rogers, fabricating printed circuits and molding Teflon, among other products.

Robert L. Moore has been elected chairman of the board of the Sheraton Corporation of America, of which Ernest Henderson continues as president. Ernie and Bob were co-founders of the huge hotel chain, and Bob was formerly its executive vice-president. The corporation now owns 41 hotels in the United States and Canada. New members of the M.I.T. Educational Council, appointed by President Jim Killian '26, are Edward I. Mandell for the Miami, Fla., area, and Joseph Wenick, for Caldwell and Verona, N. J. George A. Chutter writes about an interesting chance visit with Phil Coffin of Pittsburgh when both landed at the Syracuse, N. Y., Airport. George says they continued on from where our reunion left off last June. Phil is manager of Alcoa's Electrical Industry Sales Department, and George is a manufacturer's representative with headquarters in Jersey City, N. J. During a brief visit to New York in October, Helier Rodríguez phoned to say that he is heading a group of Alumni in Havana, Cuba, who have arranged a delightful M.I.T. party for next February 22 through 25.

Colonel Holland L. Robb, formerly of La Crosse, Wis., writes that he has a

new home on Pine Bluff Trail, Chapel Hill, N. C. New addresses have also been received for Commander Thomas H. Frost, Maurice Gerin, Harding D. Williams. Writing from Cedar City, Utah, the Reverend Everett R. Harman, Pastor of the Church of Christ the King, says: "I am trying to build a church, so I'm glad I am an architect," and encloses an attractive souvenir booklet, explaining that the parish includes two counties of 20,000 square miles, one National park, one Indian reservation, two National monuments, and two National forests. Father Harman drives more than 200 miles every weekend to say Mass in three places, his nearest colleague being 90 miles away. He serves as his own cook, says he has a fine garden and a lot of inspiring work, including making the plans and raising the funds for a new edifice. Dr. Williston Wirt, formerly pastor of the North Congregational Church in Berkeley, Calif., and now pastor of the Community Church of Pearl Harbor, Hawaii, is also planning a new church. In his new location, Dr. Wirt serves the families of the huge naval housing area adjacent to the Pearl Harbor Naval Base. The church school has an enrollment of 800 children who meet in nine Quonset huts. Church services are held in a large Quonset hut. A new, modern church building, planned for a site designated by Naval authorities, will be the future center of spiritual life and activities for service families.

Robert F. Miller, our Class photo-historian, writes about the June reunion: "I got back my Kodachromes, some 50 good shots, including the one the photographer took from the roof. Those I took on the golf course and on the lawns of the Sheldon House are among the best I have ever taken. The interior shots of the banquet are not bad, but with half facing the other way they don't come out as well as with two or three in a small group. I think I got everyone who attended in at least one picture. It certainly was the best photographed reunion and one of the best, socially. Too bad I had to break away early for one of our 'annual' graduations and had to miss the doings in Cambridge. I have another graduation coming up next year, and don't know at this time whether there will be a conflict. I would like to receive slides and movies that any of the fellows are willing to contribute to our Class collection." Address your packages to Bob at 1107 Chestnut Avenue, Falls Church, Va. Philip H. Hatch, general mechanical superintendent of the Long Island Railroad, presented a technical paper to the land transportation section of the American Institute of Electrical Engineers' fall general meeting in Chicago in observance of the Nikola Tesla Centennial. Phil's paper was entitled "Modernization of the Long Island Railroad Passenger Car Fleet."

Dr. Donald Stover Piston, head physicist of the Twining Laboratories of Fresno, Calif., for 20 years, and a native of Rockland, Maine, died in Fresno on September 30, 1956. On behalf of the Class, sincere sympathy is extended to his family. Born on December 16, 1899, Pete prepared for the Institute at Dorchester High School. At Technology, he was a member of the Chemical Society



and a private in the S.A.T.C. He received his bachelor's degree with us in Course VIII. He was an assistant professor of physics at the University of Maine from 1925 to 1933, a part time instructor at Stanford University in 1936, an associate professor at the Texas Technological College in 1941, and an associate professor of engineering at the Fresno State College for five years until his resignation in 1955 because of poor health. He received the doctorate in philosophy from Stanford in 1935, and was a registered civil engineer of the State of California. He had been a physicist for General Electric and worked on radium for the Cleveland, Ohio, Lakeside Hospital. The author of two books on meteorology which have been used in college classes throughout the nation, Dr. Piston was a member of the Western Mining Council, the Engineers Club of Fresno, the Las Palmas Masonic Lodge, and the New England Society of Fresno. His memberships included the American Association for the Advancement of Science, the American Chemical Society, the Chamber of Commerce of the State of California, Phi Kappa Phi and Sigma Phi. He is survived by his wife, Mrs. Ruth Piston; a daughter, Mrs. Lawrence Otter of Fresno; three brothers, Edward, of Fresno State College, Anthony of Boston, and Walter, professor of music at Harvard.

The reunion review, or "Who's Who," begins with Frederick W. Adams, director of research, Chemistry Department, Control Research and Engineering Division of Continental Can Company, Chicago, Ill. Fred, Jr., M.I.T.'50 and Harvard, has two daughters. Noel is M.I.T.'51 and Oberlin. Son Stephen is now two years old. Wallace T. Adams, specification engineer, National Promotion and Product Development Department of Armco Drainage and Metal Products, Inc., Middletown, Ohio, has three children and six grandchildren. Richard attended the University of Cincinnati, is married and has three children. Joyce, University of Illinois, also has three children. David attended the University of Michigan. Albert E. Bachman, president, Missisquoi Corporation and Fonda Container Company of St. Albans, Vt., is also vice-president and director of Standard Packaging Corporation. Son Ted attended Peddie. Henry D. Baldwin, president, Personal Vending Service, Inc., Baltimore, Md., yachtsman par excellence, has two children, Mary, Vassar'50, and Henry, Princeton'54.

Oliver L. Bardes, president and owner, Bardes Corporation, Cincinnati, Ohio, which includes the Bardes Forge and Foundry Company and the Cincinnati Elbow Company, has two sons, two daughters and two grandchildren. John W. Barriger, 3d, president, Pittsburgh and Lake Erie Railroad, Pittsburgh, has two sons and two daughters, John, 4th, M.I.T.'49 and Yale'50; Stanley, M.I.T.'55 and Yale'56; Ann, Wellesley'52; and Betty, St. Louis University'52. Garvin Bawden is sales manager of printing and binding machinery for Dexter Folder Company, Boston. Daughter Nancy attended Smith. She is married and has two children. Garvin, Jr., M.I.T.'46 and Dartmouth, is married and also has two children. Roderic L.

Bent'19 is treasurer of S. Bent and Brothers, Inc., of Gardner, Mass., manufacturers of the finest wood seat Colonial Windsor chairs, including the famous M.I.T. chair, which affords superb gluteal comfort. Gardner Bent, M.I.T.'48, has a son, and Jack Bent, M.I.T.'50, has two daughters.

Colonel Harold O. Bixby heads his own firm, H. O. Bixby Associates, electronics consultants of Cambridge, Mass. Daughter Barbara, Arlington Hall, has four children. Richard, St. John's and University of Pennsylvania Law School, has two children. Charles V. Briggs has retired as librarian of the Research Department, Monsanto Chemical Company, Everett, Mass. Son Charles, Jr., attended Harvard, and daughter Suzanne went to Cornell. There are two grandchildren. Laurence O. Buckner is sales manager, Metropolitan Edison Company, York, Pa. Son James is a 1951 graduate of Allegheny College. Malcolm S. Burroughs'20 is vice-president and director of the Dexter Folder Company, New York City.

Make good that resolution to write a note to your Secretary and do it now! — CAROLE A. CLARKE, *Secretary*, Federal Telephone and Radio Company, 100 Kingsland Road, Clifton, N.J.

## 1922

Plans for our 35th Reunion are moving forward. The dates, June 7, 8 and 9, and the place, the Sheldon House, Pine Orchard, Conn. The Reunion Committee is preparing detailed information which will be sent to each member of the Class.

Lachlan Mackenzie is in Chile on a two-year assignment for our government. In a letter to your secretary, he speaks of Chile, saying: "... the country with the perfect climate from September through April when, for an eight-month period, rain falls only two days per month on an average, and the nights are always delightfully cool after sunny days. Santiago is in a beautiful valley between the towering Andes mountains of 24,000 feet elevation and the lower coastal range. The country is 2,600 miles long and averages only 100 miles in width. The people are freedom-loving and energetic. The business men whom I have met seem to be more like our people than those of other Latin American countries, and I have found them most cordial and eager to learn about the industrial and management techniques we have been developing in recent years in the United States. I hope to get up to the 35th Reunion next summer, but I am not sure yet." He also says that he is able to play golf almost every weekend in Santiago, which reminds us of a golf match with Lachlan in the mid-twenties at the Essex County Country Club in West Orange, N. J., with Lachlan getting an ace on a long par three. Who else in the Class has made holes in one? Ab Johnson and Oscar Horovitz come to mind. Are there others?

Walter M. Saunders, Jr., treasurer of the Northampton Cutlery Company in Northampton, Mass., has recently been elected a trustee of the Cooley Dickinson Hospital. Myer Alpert, owner of the Alpert Furniture factory in Jamaica Plain, has opened a new furniture store in Natick

on Route 9. Dr. Lester C. Lewis and his family have moved from Hamden, Conn., where they have been for the past four years, to 1 Park Lane, Staten Island 1, N. Y. Dr. Lewis has given up his pastorate at the First Unitarian Church of New Haven to accept the chairmanship of the Department of Mathematics and Physics at Wagner College on Staten Island. In a recent note he says: "Come see us and watch the liners of the world go through the Narrows. And please send students—the best possible for this 'emergency,' and, if you can, equipment—nowhere more needed, more appreciated, and I mean to make it more productive."

Dana D. Sawyer, with the Federal Reserve Bank of Boston since 1934, has been promoted to vice-president. He had been assistant vice-president and personnel officer since 1947. Norman P. Randlett has his architectural offices in Laconia, N. H. Oscar Horovitz's film, "Belo Horizonte," has been selected as one of the ten best films of 1956 by the P.S.A. International Cinema Competition. This is the 22d award Oscar has won in national and international film competitions. "Belo Horizonte" is a 16 millimeter color film of the city of that name which is about 175 miles northwest of Rio de Janeiro. Among his other activities, Oscar is currently directing the motion picture group of the Boston Camera Club.

William F. Herlihy has recently built a new home on Maple Avenue in Atkinson, N. H., just over the line from Haverhill, Mass. Dr. C. Rogers McCullough of St. Louis was appointed last July as deputy director for hazards evaluation in the Atomic Energy Commission's civil application division. As hazards deputy director, Dr. McCullough will direct the work of developing standards for the safe design and operation of atomic reactors and other nuclear facilities, and of evaluating individual facilities from a safety standpoint for use by the commission.

Ab Johnson's daughter, Joanne, was married in Muncie, Ind., last September 15 to James N. Douglass of New York City. It was a large wedding with some 500 guests, and first-hand reports from classmates who attended indicated that Ab and his wife, Betty, did everything possible to provide a happy and gay occasion. A number of M.I.T. men attended, and our Class was represented by Fred Dillon, George and Helen Dandrow, and Ralph Geckler.

Charles E. Mowry was married to Mrs. Serena V. Ashley last August in Windsor, Vt., where they now make their home at Ascuney Hill Farm. During World War II, Mr. Mowry served as a major on the staff of the U.S. Military Academy at West Point in the Modern Language Department. Mrs. Mowry, the daughter of the late Mr. and Mrs. William H. Blodgett of Winsted, Conn., is a graduate of Connecticut College and the University of Connecticut, and for the year prior to her marriage, had been doing educational research work in England. Laurence B. Davis has been made a member of the M.I.T. Corporation Visiting Committee for the Department of Meteorology.

We are sorry to report four deaths. Two occurred some time ago. Clarence J. Mc-



Intire died February 28, 1954. His home at that time was in Glens Falls, N. Y. Walter T. Vahlberg died December 5, 1955 in Oklahoma City, Okla. More recently, we have heard of the death of Maurice B. Bradley of Cleveland on September 10, 1956, from a heart attack. He was a partner in Baker-Bradley Company (engineers and sales agents), but was taking life easy because he had suffered a slight heart attack a couple of years ago. Bradley attended the 25th Reunion, and he subsequently told Clate Grover that he had always regretted not having attended earlier reunions. Bradley was active in church and Y.M.C.A. affairs, and he is survived by his wife, Elsie.

Dr. Bert Barnet Hershenson died October 7, 1956, in Brookline at the age of 58 of a heart ailment. He had a distinguished career in medicine, being internationally known as an anesthesiologist, and at the time of his death was director of anesthesia at the Boston Lying-In Hospital. After graduating from M.I.T., he graduated from Harvard Medical School in 1927, and then continued his studies in gynecology and obstetrics at the University of Pennsylvania, and later in Dublin, Gottingen and Budapest. At the time of his death, he was also a member of the staff of Tufts, Boston University, and Harvard medical schools. He is survived by his wife and a son. To the families of these deceased classmates, we send our sincere sympathy. — C. YARDLEY CHITTRICK, *Secretary*, 41 Tremont Street, Boston, Mass. WHITWORTH FERGUSON, *Assistant Secretary*, 333 Ellicott Street, Buffalo 3, N. Y.

## 1923

Alfred E. Perlman, XV, president of the New York Central Railroad, gave a talk before the Westchester Alumni at the Scarsdale Golf Club, November 8. Apparently railroads lose quite a little money carrying mail and many types of commuters. He claims that if the Central could give up the West Shore Branch, it could afford to give each commuter thereon a new Cadillac. All the money saved by changing over to diesels and by improved fueling methods goes into operations that are not self-supporting.

John E. Burchard, IV, acquired a new daughter-in-law on September 29 when his son, John Jr., married Miss Marjorie Beyer of Memphis, Tenn., at the Princeton University Chapel. John, Jr. is completing requirements for a doctor's degree in biology at Princeton. The newly married couple spent their honeymoon in the beautiful State of New Hampshire and are now residing in Princeton.

An announcement from Philip Coleman, XV, stated that he and Mrs. Charles Seymour Nason were married on October 20, 1956, and will reside at 724 Maclean Avenue, Kenilworth, Ill. Phil took us by surprise. Your scribe was deluged with letters asking that the event be noted herein. Congratulations and best wishes, boy!

Colonel Nicholas Kane, I, has retired from the U. S. Air Force and is now employed as engineer with the City of New York, Borough of the Bronx. Rear Admiral Roy T. Cowdrey, XIII, has retired from

the Navy to join Olin Mathieson Chemical Corporation, Aluminum Division, in New York City.

Professor Daniel C. Sayre, I, an American aviation pioneer and one of Boston's earliest air executives, died at the Princeton, N. J., hospital, October 19. He served at the Institute as assistant professor of aeronautical engineering from 1928-1932. He held editorial posts on *Aviation* magazine from 1933-1939. He founded the *Civil Aeronautics Journal*, and later became chief of the Safety Rules Division, Civil Aeronautics Board. In 1941, he went to Princeton as assistant dean of the School of Engineering, then became director of the Forrester Research Center at Princeton University in 1951. He leaves his wife, Rosamond, a son, William H., and a daughter, Mary Grover.

The annual report of the M.I.T. Alumni Fund indicates the Class still holds second place as class contributors. Congratulations and thanks to all of those who have made such a fine record possible! — HOWARD F. RUSSELL, *Secretary*, Improved Risk Mutuals, 15 N. Broadway, White Plains, N. Y. WENTWORTH T. HOWLAND, *Assistant Secretary*, 1771 Washington Street, Auburndale 66, Mass.

## 1924

We signed off last month's column with, "Be back again next year." So here it is already, next year — and we're back.

First, not a correction but rather an expansion on an item which really missed the point. We reported last month that "Señor Cornish of Old Mexico" was in New York. It wasn't Señor, it was Señor and Señora, the charming and vivacious Luisa. And the occasion for the visit was not known at the time to your secretary. It was the marriage of the Cornishes first-born, Martin (C. M., Jr., M.I.T.'50) to Mrs. Carol Dandrow Steuer, daughter of the C. George Dandrows of New York. Martin, food technologist for the Food Machinery and Chemical Corporation, in New York, was one-half of the team that won the intercollegiate bridge championship for M.I.T. a few years ago. The new Mrs. Cornish, Jr., is, of course, the daughter of the former Olympic champ, Alumni Association President, and Johns-Manville vice-president, George Dandrow '22. After an exhilarating and exhausting nuptial go-around, the Cornishes, Sr., finally made it back to Villa Obregon.

Somewhere in his wanderings, probably while shipping a load of oil, Barnacle Bill Simonds picked up the news that Fred Gamble, our Dallas home builder, is really rushed. No big developments, but very modern homes, air-conditioned, all modern conveniences, etc. That other dyed-in-the-wool Texan, Joe Mares, has finally come out of retirement in Dickinson. Haven't the slightest idea what Joe's doing, but the fact that he has a "Commerce Building, Houston" address indicates that he's back at work.

At the October meeting of the Maine Federation of Business and Professional Women's Clubs in Norway, Maine, the dinner speaker was the Reverend Gertrude G. Harris. Not being familiar with these things, it came as a surprise to your secretary to learn that Gertrude, a Meth-

odist minister, graduated from an Episcopal Theological Seminary. One of our insurance men, Maurice T. Crowell, has been transferred to Wisconsin where he is branch manager for the Employers Group. After 10, these many years as a Professor at M.I.T. (since graduation, in fact), Charles H. Blake has left the academic scene. This summer he resigned, left immediately for the Caribbean to band birds on their fall movement south. He returned in time to do his duty at the polls on November 6. As president of the Northeastern Bird Banding Association, Charlie isn't satisfied just to band his birds in New England. He follows them south just to make sure they got there.

The name of David Lasser hasn't cropped up in the news for a long time. It did during hearings on last year's Westinghouse strike, held in Pittsburgh this year, mostly concerned with the Westinghouse time study program. Said Westinghouse: "It is a part of management's right to manage." Said Dave, research director for the International Union of Electrical Workers: "It violates the company-union contract," since the plan was instigated "to reduce costs and eliminate unnecessary people."

The MacCallums of California have given up the country life for that of cliff dwellers. They've moved into Los Angeles to a 10th floor apartment in an impressive looking community called Parklambrea Towers. Don't know Los Angeles at first hand, but this sounds as though it's near the tar pits. In October, Monsanto's president, Charles Allen Thomas, did a bit of forecasting for the Investment Bankers in New York. Among his predictions: turning sea water into fresh water "to make the sea a reservoir capable of turning deserts into fertile fields"; that the energy to do this might come from the sun; that chemicals will be injected in soils and sands to make them hard and impenetrable; that houses will be built almost entirely of plastics; and that by 1980, one-hundred million kilowatts of power will be generated from atomic energy. Better file this month's column so you can check Dr. Thomas later.

Another year dawns. May it be one of peace and prosperity, good health and fulfillment for all of you. And if you're making out a list of good resolutions, enter one item in that section that's going to be kept — drop your secretary a line now and then. You will be doubly blessed. — HENRY B. KANE, *Secretary*, Room 1-272, M.I.T., Cambridge 39, Mass.

## 1925

Many of you may have seen an article in the *New York Times* of August 5, 1956, which starts off with this statement: "W. Maxey Jarman is the man who doesn't want to be known as the man who bought Tiffany's." However, the General Shoe Company of which Maxey is the chairman did buy Tiffany's in July of 1956, but only as part of a package that included the Hoving Corporation's seven women's specialty stores and perhaps a half dozen others that the president of the Hoving organization is thinking of opening. In an interview, Maxey pointed out that the

General Shoe Company has been doing a 50-million-dollar business a year in areas concerned with items other than footwear. He considers his Corporation as being in the fashion business. As most of you know, Maxey has been concerned with the shoe business since he left the Institute to strike out with his father in the business of which he became president in 1932 and chairman in 1947. The New York Times article goes on to say many fine things about Maxey and the way in which he has carried on his business, applying at all times Christian principles to his business policy. If you can obtain a copy of the original article, I certainly recommend that you read it.

A preliminary release has come in indicating that the Audio Engineering Society will meet in Los Angeles, February 7 and 8, 1957. Chester A. Boggs of our Class, who is with the Western Geophysical Company in Los Angeles, is vice-chairman of the meeting, and any of you who may attend the meeting should be on the look-out for him.

It is to be noted with sadness that Ernest Wayne Rembert, an executive with the World Bank in Washington, died at his Silver Spring, Md., home on October 21, 1956. Dr. Rembert received his doctor of science degree in chemical engineering with the Class of 1925, and for the past nine or ten years has been connected with the World Bank, formerly known as the International Bank of Reconstruction and Development. In this capacity, he had traveled extensively on missions for the Bank, working in many foreign countries and supervising power projects valued at several hundred millions of dollars. — F. L. FOSTER, *Secretary*, Room 5-105, M.I.T., Cambridge 39, Mass.

## 1926

As I read my reminder that the notes are due, it reminds me of a song title — my months are a little different but anyhow, "It's January in November." These notes are being written on Sunday, November 11, Armistice Day. I'll therefore try to impart a little frigidity, which actually isn't too difficult. The temperature here at Pigeon Cove was 20 degrees at 7:00 this morning. It was cold enough so that the weather man shamed me into the procrastinated chore of removing screens and installing storm windows. Consequently, I am late getting under way with the notes — the sun is high and beckoning me to come outside. Let's see what we can churn up from our chopping bowl file.

On top is a clipping about ecclesiastic classmate Monsignor Art Riley — the news item tells about the silver anniversary of his ordination. We extend our congratulations, and hope that in turn he will say a prayer for some of us among his classmates who need it. A package recently came from Henry Rickard, and then a letter of explanation. It contained a tape recording made during reunion last June in the Drum-Drain headquarters. I am waiting to hear it with mixed emotions. I have no recording machine and will have to get a friend to run it off on his machine, which is something I am hesitant

to do. I have an idea that we may not want anyone outside the '26 family to hear it. I will give you a report later — at least on what is printable. I was surprised to read in Henry's letter that he is joining Edward N. Hay and Associates of Philadelphia Management Engineers. Ned Hay is one of my principal Star boat competitors here in the summertime, and also is Jim Drain's brother-in-law. Congratulations, brother Rickard, and best wishes!

Jim Killian has forwarded a letter Bill Edwards wrote him from Stockholm about — yes, you guessed it — his "perpetual calendar." Bill was on a trip to 24 new countries and 80 cities promoting the calendar. To quote Bill, his calendar has become "almost a Frankenstein," it requires so much of his time and effort. I doubt, however, that he would be doing it if he did not enjoy the process. Bill bumped into Jay Goldberg and his wife on a bus tour of Copenhagen. You may recall that Jay was co-author of the 1926 Class Show, and since Bill had a part in the show, this was more than an ordinary reunion. On the same trip, Bill also visited South Africa, and at Johannesburg had lunch with Glen Bateman '25 at Glen's Club.

Here is a publicity release from the Cleveland Health Museum: "William Crighton Sessions was elected vice-president of the board of trustees of the Cleveland Health Museum last month." The release also states this was the first health museum in the United States and still is the only independent such museum in this country. Another release tells of the election of Elton Staples as president of the Industrial Heating and Equipment Association. (The release is dated May 15, but my office stamped it received three days ago — however, it is still news to most of us.) Congratulations, Bill and Elton, for the respective honors.

The day is so nice, I fear that I must cut the notes short and get out with Heidi and do a little training. We haven't reported our St. Bernard pup's weight lately because it is not easy to balance her on a scale any more. However, on her first birthday in October, we succeeded in weighing her, and she tipped the scales at 153 pounds. You can see, therefore, why I must spend some time training her to "heel" and "come" — otherwise I would do the "heeling" and "coming." She's a great pup, though, and a true member of the family. With all good wishes until the February issue. — GEORGE WARREN SMITH, *Secretary*, c/o E. I. du Pont de Nemours and Company, Inc., Elastomers Division, Room 325, 140 Federal Street, Boston 10, Mass.

## 1927

Marshall W. Jennison, professor of bacteriology, Department of Plant Sciences, Syracuse University, has been made chairman of the Department of Plant Sciences as of July 1, 1956. He has been at Syracuse for the past ten years, and was on the M.I.T. Faculty from 1927 to 1946. Russell C. Taylor has been named a board member of A.C.F. Industries, Inc., it has been announced by Charles J. Hardy, Jr., chairman of the board. Mr. Taylor is

a vice-president, director, and member of the executive committee of the Republic Aviation Corporation. He started with American Can as a supervisor in its Boston plant in 1926.

To the best of my knowledge, George Chatfield has lived in the New York area for many years, but our paths did not cross until the other night, when we both got off the train at Fleetwood, both heading for automobile row to pick up automobiles which had been under repair. George is executive vice-president of William Esty Company, Inc. (advertising), and lives in Larchmont, N. Y. Frank C. Staples has been elected president and vice-chairman of American Molasses Company of New York. The *Encyclopaedia Britannica* has announced the appointment of Maurice Davier to its editorial advisory board. We previously recorded his appointment as professor of business administration at the new Graduate School of Business of the University of Virginia.

Bill Payne's company (Payne and Company), which was founded by his grandfather 91 years ago, recently moved to a new plant in Dayton. Louis F. Eaton, recently named president of Brockton Edison Company, has been elected trustee of the Brockton Savings Bank. Goodyear Aircraft Corporation's recently appointed president is Tom Knowles, who has been associated with Goodyear since graduation. We regret to record the death of Thatcher H. Mawson on June 29. We have no further details. Although this information is very late, we would like to report that Werner Willmann's parents observed their 55th wedding anniversary in June of this year.

The M.I.T. Alumni Fund reports that for 1956, 201 of our active Class roll of 608 are contributors to the fund — about one in three. The average contribution was \$51. This is just about level with the average of all classes. — J. S. HARRIS, *Secretary*, Shell Oil Company, 50 West 50th Street, New York, N. Y.

## 1928

Bill Hurst was in Cambridge on August 20, and your assistant secretary was most pleased to have him as a visitor. Bill is still very much occupied as a petroleum engineer, and has his own business in Houston, Texas. Much of his work is in the capacity of expert in oil field litigation. In common with most of us, one of Bill's immediate interests is getting his youngsters educated and off to a good start. He has two sons, Charles Michael, 21, and John Byrn, 20.

On Wednesday, September 26, we met John Connelly on board an airplane headed for Grand Rapids, and enjoyed a very pleasant chat with him. John is a man of many interests. He is a business consultant, vice-president of Sherrill-Noonan, Inc., York, Pa., vice-president of Keystone Roofing Manufacturing Company in York, and has interests in a trucking company and in a candy company. In addition to all this, John has plenty of outside activities. He has been president of the York, Pa., Chamber of Commerce and is now Trustee of York Junior College. In 1950, the Connelys built their



new home in York. Daughter Ann graduated from Bucknell College in 1955 and visited Europe during the summer of 1954. Son John is now at Williams in the Class of '57, where he is studying political science and economics.

A brief note in *Sons of the American Revolution Magazine* of October, 1956, reported upon the annual dinner of the Hawaiian S.A.R. and D.A.R. Our friend and classmate, Carl B. Andrews, who lives in Hawaii, gave the invocation and benediction at the dinner.

Max Parshall sent an excellent newsy letter to Ralph Jope. How pleasant life would be for your class secretaries if more of you would be moved by the same spirit. Many thanks to you, Max. Despite the very modest tone of Max's letter, it is perfectly obvious that he leads a very busy and useful life. Although he started out after graduation as a chemist, he turned to engineering, and is now at Colorado Agriculture and Mechanical College, where most of his time is spent teaching water supply, and sewage mechanics and surveying. He keeps up his interest in chemistry and bacteriology so as not to lose his touch. Along with this, Max supervises observations and records at the Colorado A. and M. weather station (just a mere detail apparently). For non-professional activities, Max likes to fish and hunt (he says wife Mary is a better hunter than he is), and raises a sizable vegetable garden each year. All this in addition to playing in the local Civic Orchestra and maintaining an interest in his societies. This is enough to tell you that Max is still going strong—we hope to get in most of his letter at a later writing.

Ralph Jope also received the following item of news in September regarding another of our esteemed classmates: "Mieth Maeser was elected to the office of president-elect of the American Leather Chemists Association at the annual meeting of the Society, held at Mackinac Island in June. During the next two years, Mr. Maeser will act as coordinator of all technical committees of the Association, and will assume the office of president in 1958. His term of office will be two years. Mr. Maeser joined the A.L.C.A. in 1940 in order to serve on the Physical Testing Committee in developing tests for leather, and became chairman of the committee in 1945. In 1945, he was given the Alsop Award for outstanding work in and service to the leather industry; and in 1954, he was elected to the Council of the Association." Our congratulations to you, Slim, on this well-deserved honor and recognition of your excellent work!

Plans for our 30-year reunion in 1958 are going forward with enthusiasm. Those who attended the unforgettable 25th will need no urging. Those of you who were unable to make it in 1953 must not miss it this time. With your help, the 1958 Reunion Committee intends to make the 30th an outstanding event in your life. So, the greater the number to appear, the greater probability that it will be outstanding. — GEORGE I. CHATFIELD, *Secretary*, 49 Eton Road, Larchmont, N. Y. WALTER J. SMITH, *Assistant Secretary*, 15 Acorn Park, Cambridge, Mass.

## 1930

We are continuing to receive a good deal of news from our classmates, and I know that this is gratifying to all of you. Morris Shaffer sent a note from New Orleans. He's been down there for 13 years, and really feels himself a second-grade New Orleanian; quite a change from being a born and bred New Englander. He is department chairman and professor of microbiology at Tulane Medical School, is married to a microbiologist who, he says, is a better one than he, and is the father of a 10-year-old naturalist—the most observant lad he has ever seen. Morris hasn't seen a '30 classmate for two years—the last one being Sid Kaye, who went down to New Orleans for the Mardi Gras. Parker Starratt dropped us a note to say that Charlie Prichard and his wife were among those attending the Alumni Day dinner at Rockwell Cage last June. Charlie lives in Nashua, N. H., and is head man at the Gas Company there.

Mark Culbreath sent us a note from Kansas City, Mo. He has been with Burns and McDonnell Engineering Company of Kansas City for 26 years and, for the past few years, has been in the field of sanitary engineering. This work carries him to all states in the Union and some foreign countries, which makes life interesting. Mark and his wife spent a very delightful five-week vacation last year which included 7,500 miles, covering New England and three maritime provinces of Canada. The main event on their tour, says Mark, was his 25th Class Reunion at which the Culbreaths enjoyed meeting old friends again and seeing the fine new buildings at Tech. Irving Dow dropped us a note from Washington, D. C., to say that he has just completed his 22d year at the Naval Gun Factory. At present, he is head of the product design division there. He doesn't see much of the old gang, and thinks perhaps that Washington, D. C., doesn't seem to be their hang-out.

Bob Henderson is presently resident manager, Climax Molybdenum Company, Climax, Colo. The altitude in that area is 11,300 feet, and the production is approximately 30,000 tons a day. Bob has passed along the word that he understands Bernabe Barrios is managing his family's cattle ranch near Tampico, Mexico. Bob Cook salutes architects everywhere! He has just moved to Pittsburgh, Pa., where he is now vice-president, Development and Engineering, for a newly formed concern—The UNIFAB Corporation. The company is developing and will soon manufacture a series of modular building components from which many types of structures may be erected to include colorful, modern design metals and cementitious (wow!) facing materials, and a new honeycomb core material. He's just back from a business trip to Sweden.

Ralph Appleton has written to say he has changed his work and is now in estate and trust management. His business address is Good Realty Company, 329 East Broad Street, Columbus 15, Ohio. His son, Fred, age 19, is a sophomore at Kenyon, and his daughter, age 15, is a sophomore at the Columbus School for Girls. He and his family have just moved

into a new home at 442 South Drexel Avenue, Columbus 9, Ohio. Reg Bisson of Laconia, N. H., tells us that he achieved his "first plateau" this past September when his oldest son, William, entered M.I.T., Class of '60, in chemical engineering. Reg is engineer and owner of W. M. Bisson and Son, doing mostly building construction in central New Hampshire. He says he is busy as the proverbial beaver right now. He has a very active interest locally and statewide in both industrial and charitable organizations. At present, he is serving his second year as senior vice-president of New Hampshire Department of the Reserve Officers' Association of the United States.

We have the following changes in address to report this month: Harold J. Brown, 6947 College, Indianapolis 20, Ind.; Joseph W. Devorss, Jr., Brookville Apartments, 5419 Taney Avenue, Alexandria, Va.; Captain Kenneth Earl, 59 Orne Street, Marblehead, Mass.; Josiah H. Child, Ames, Child and Graves, 711 Boylston Street, Boston 16, Mass.; George F. Wyman, 1315 West First Street, Coffeyville, Kansas. — GEORGE P. WADSWORTH, *Secretary*, Room 2-287, M.I.T., Cambridge 39, Mass. LOUISE HALL, *Assistant Secretary*, Box 6636, College Station, Durham, N. C. RALPH W. PETERS, *Assistant Secretary*, 249 Hollywood Avenue, Rochester 18, N. Y.

## 1931

The 25th Reunion Committee held its final meeting on November 7. Chuck Turner, our "Reunion Chairman—Retired," has summarized the results in a letter, a copy of which has been sent to all members of the Class of '31.

"Dear Member of the Class of 1931: We have just held, on November 7, the final meeting of the Reunion Committee and are happy to report that the 25th Reunion was successful in all respects. We were naturally concerned about the financial outcome, both from the standpoint of the gift to the Institute as well as the Reunion operational expense. These were separate financial departments.

"You probably already have heard that the Class Gift Committee, headed by Ralph Davis and Ed Hubbard, went over the top in their quest for \$30,000, a major part of which was for the 1931 Compton Freshman Scholarship Fund. This is both a commendation to their management and to the members of the Class who contributed so well—especially since we are the first class which did not have 25-year endowment policies maturing as gifts to the Institute at the time of the 25th Reunion.

"At the beginning of our Reunion effort, we found it necessary to solicit funds to finance the cost of the Reunion mailings. Your contributions to this amounted to \$668.50. We then were faced with the problem of setting the Reunion attendance cost at a figure which would not be excessive but which would assure a solvent finish. We attempted to come up with a price which would be just enough to come out even, assuming that we were fortunate enough to obtain the same attendance as the three classes before us. As a result



of the excellent publicity effort advanced by Gordon Speedie, and the diligent attention in obtaining biographical information for the Class Book by Ed Worden, and the strenuous effort of all committees, we were deluged by an attendance which broke all records. This naturally not only made a successful Reunion but assured us of financial success as well.

"We are happy to report that the Reunion Treasurer, Helge Holst, is turning back to the Class Treasurer (the newly elected Bill Jacobs — also a member of our committee), not only the sum of \$249.27 which was loaned to the Reunion Committee from the old Class treasury, but an additional sum of \$2,151.67, representing the surplus on the operation. The Committee sincerely hopes that this fund, which will be conservatively invested for interest under the direction of Howie Richardson, Class President, will serve as a financial reserve to the Class in the years to come and will make unnecessary future solicitations for operating expense such as was necessary at the beginning of this Reunion. Sincerely yours, Chuck Turner, Reunion Chairman — Retired, P. S. Want an extra copy of Class Book at \$8.50 or \$5.00? If so, write Ed Worden at P. O. Box 71, Westport, Conn."

Shortly after the November 7 meeting, Ken Snowden recalled that a number of those at the Reunion expressed an interest in an informal get-together in Puerto Rico next year. In his letter, Ken said: "The ultimate proof of success of our 25th Reunion is that not only did all of those participating hate to see it end, but also that many wished to find some way for a repeat performance. It is about this last point that I write this letter."

"During the waning hours, a group of husbands and wives gathered in the lounge of Baker House for a few final moments of reminiscence. Generated by nostalgia, an idea was born that seemed to meet with enthusiasm, possibly spirituous. That idea was not to wait 25 years or even five years for another reunion. We should hold one next year, and the location should be Puerto Rico. Present was our classmate from Puerto Rico who felt that such a reunion would not only be enjoyable but of possible mutual benefit to all concerned. If there are any classmates to whom this idea appeals, please get in touch with either the writer or Ed Worden, and the possibilities will be explored. Please note that this, obviously, would be a comparatively small group, and that it would be an informal event, not an official Class reunion. Sincerely, Ken." [L. K. Snowden, 39 Stella Road, Belmont, Mass.] If the idea appeals to you, drop Ken a note.

Rather belatedly, we received word that Charley Bicking has been appointed manager of the quality control branch of the Research and Development Division of Carborundum Company, Niagara Falls, N. Y. Charley has made a name for himself in the science of quality control.

The following letter arrived just under the wire from Ed Hubbard, who has achieved fame along with Ralph Davis as co-chairman of the Special Gift Committee. The Class can well be proud of its record last year. "You might like to hear some reflections from the crasser,

dunning element of the Class on where we stand, how we're doing, and where we go from here. The latest statistical record of Alumni contributions in 1955-1956 show that the Class of 1931 was the third largest giver in total dollar amount among all the classes, beaten out only by 1902 with \$34,725, and 1922 with \$33,743. Our total gift of \$30,351 was 5.3 per cent of the total given by the classes of 1879 to 1955 inclusive. The Class Agent and Special Gift co-chairmen are proud of the Class record of giving and all those who helped to bring home the bacon.

"And while we're statistically browsing, we note that our total of 39 per cent of the active class roll participating in the Class Gift was the highest percentage for classes 1930 through 1939, and was equalled by only one of classes 1920 through 1929, and exceeded by five of classes 1910 through 1919. For earlier classes, giving by 40 per cent to 65 per cent of the active class roll was the norm. I would like to point out that Alumni who make a habit of making an annual gift to M.I.T. live longer. The statistics clearly show a high mortality among non-givers, because the further back you go among the classes the smaller percentage of non-givers you find. Q.E.D.

"We still have an opportunity to build up the 1931 Compton Memorial Freshman Scholarship Fund with all of our 1956-1957 Alumni Fund contributions, which automatically go for this purpose unless otherwise specified. Many thanks to the 252 members of the Class who gave last year. We were cheered to see 78 names on the roster who were starting or resuming the habit. We missed 16 who had given in the previous year, and know that several of them suffered personal or financial misfortunes; we hope all the rest were merely forgetful and will be back in this year.

"Now I would be the last to suggest that the columns of the 1931 Class Notes in The Review be defiled by an appeal for money, however worthy the purpose. But I can say this: if we hold last year's contributors and add 72 more, we'll have 50 per cent of the active Class role, we'll be among the first five givingest classes, and believe me, that will be plenty of ammunition for your special gifts promotion group to put in special work where it counts."

Among the new addresses received since the last letter are: Elmer P. Rankin, 8 Belair Road, Wellesley 81, Mass.; Professor John L. Reid, 1069 Market Street, San Francisco, Calif.; Morley G. Taylor, 10 Thornvale Avenue, Halifax, Nova Scotia; A. Harry Wagner, 4901 New Kent Road, Richmond 25, Va.; Mark W. Weiss, 120 Melrose Place, Ridgewood, N.J. — E. S. WORDEN, *Secretary*, 9 Murvon Court, Westport, Conn. GORDON SPEEDIE, *Assistant Secretary*, 22 Harvard Avenue, West Medford, Mass.

## 1932

As this is written, the Class gift program is getting under way, with Don Gilman as special gift chairman. Don is being assisted by Joe Welch, as Class agent, and Oliver Scharnberg. Our goal

of \$32,000 is a real challenge for us, but with Don at the helm, we should make or better our goal. Rolf Eliassen reports good progress on the 25th Reunion plans. A Boston committee is being set up to expedite the program, with a dinner held on November 28.

A news note on Art Marshall tells us that he has been named to the Labor Committee of the Section of Administrative Law, American Bar Association. This is a geographically distributed committee, with the responsibility of considering procedural aspects of the labor laws for the American Bar Association. Art writes that he is thoroughly enjoying his law practice, which brings him in close contact with the personal and financial problems of many of his clients and gives him a good insight into many of the experiences of living. He has been admitted to practice before the United States Courts, the Court of Tax Appeals, the Bureau of Immigration, and Federal Communications Commission.

Art MacKusick's son, Arthur, Jr., has become engaged to Patricia Lee of Springfield, Va., where Art is now living. Art has recently been made a colonel. Art, Jr., is a cadet at West Point. Joe Ivaska has moved to Rochester, Mich., where he is now employed as a staff engineer at Vickers, Inc. Elwood Schafer, manager of Color Planning, C.B.S.-Hytron, is one of the C.B.S. executives on behalf of whom an unrestricted grant of \$2,000 was given his *alma mater* as repayment of the cost of his education above the normal tuition. This year's C.B.S. program totalled \$50,000.

Major General Mechling has been commander of the Air Force Armament Center at Eglin Air Force Base, Fla., since 1952, where a major job has been done in the development, supervising, and testing of all non-nuclear munitions for the Air Force. Since he took over the Base, the personnel has increased from 50 to 300 technical people, with a civilian and military staff totaling 2,000, and an operating and research and development budget of almost \$23,000,000.

George Weed is manager of the DuPont Products Department, American Trading Company in Tokyo. He has been working with this firm since 1951. His note says: "Have been working with above firm since June 1951. The company is sole distributor of DuPont Products in Japan (except Petrochemical Textile Fibres and Remington Arms Departments). With best wishes to the Class of '32, Course V. The M.I.T. Club is quite active in Tokyo. Please look me up when you come to Japan."

A note from W. R. James, assistant purchasing agent of Sandia Corporation, Albuquerque, N. M.: "Dear Bob: Best wishes from the Land of Enchantment."

Archie Riskin, architect, has been in private practice in Boston since 1936, at 262 Washington Street. Tom Hartigan is scheduling supervisor of Sperry Products, Inc., Shelter Rock Road, Danbury, Conn. — ROBERT B. SEMPLE, *Secretary*, Box 111, Wyandotte, Mich. WILLIAM H. BARKER, *Assistant Secretary*, 45 Meredith Drive, Cranston, R. I. ROLF ELIASSEN, *Assistant Secretary*, Room 1-138, M.I.T., Cambridge 39, Mass.

John Hrones is long returned from his six-month tour of Europe. Regular readers will remember the accounts of his travels in Greece and Turkey. John's visits to various universities are of interest in view of his comments on European educational methods in teaching engineering. Below are his notes on visits to Technische Hochschule in Zurich and in Stuttgart.

"On April 21, I met with Professor Honegger at the Technische Hochschule in Zurich and we talked about engineering education and education in general. All children must go to school for nine years, of which six and one-half are spent in the elementary schools. About ten per cent, after completing the six and one-half year elementary course, go to the Gymnasia for another six and one-half years. A large number complete nine years of school and then train for a vocation. Still others continue in the public schools for 12 and one-half years total.

"Those who go to the Gymnasia get a top-notch education. The curriculum includes math through elementary calculus, a very strong physics and chemistry program, and a good general education. Students are carefully selected and the load is heavy. Those who graduate from the Gymnasia are admitted without examination to the Technische Hochschule and form the largest category in the student body. About 15 per cent come from foreign countries (mostly continental Europe).

"The Technische Hochschule at Zurich is the only technical institute in Switzerland and the only engineering school at the university level. It is partially supported by the Federal Government. A tuition charge of about \$400 per year is made. At the present time there are about 3,000 students. The financial matters of the institute are handled by a board of trustees headed by a president. A rector and deans (heads of departments) are elected every four years. Most of the professors in engineering have had extensive industrial experience prior to their appointments and have a great deal of freedom in running their subjects.

"The course is of four-year duration. The program is a heavy one devoted to science and engineering subjects. No humanities are offered. Every student must have one year of work in a shop in addition to the four-year program to get a diploma. Many men put in two years of military training during their college years. Hence, the time required to win a diploma is often seven years. Upon graduation, engineers receive about \$150 to \$200 per month figured at the official exchange rate. The claim is made that this is the equivalent of \$400 per month in the United States. Perhaps it would make possible a standard of living that \$250 to \$300 would buy in the United States.

"Swiss engineers are very much in demand. The quick impression one gets is that little research is carried on in the university. Most of the laboratories are very well equipped for teaching, and Swiss students spend more time in the lab than the U. S. students. The over-all

appraisal is that a first-class job of education is done for a carefully selected group of students. The staff and plant are both good.

"On May 3, I left the family and took the train to Stuttgart, where I saw Professor Leonhard at the Technische Hochschule at Stuttgart. Leonhard is about 50, short, solidly-built, but not heavy. He speaks only German, but we talked freely through an interpreter, one of his students, Klaus Boettger. We visited the new television tower and had lunch together. He also escorted me through his laboratory. A variety of interesting development and research work is being carried on by his assistants, most of whom are working for their doctorate.

"The Technische Hochschule at Stuttgart was seriously damaged during the war, as was the entire city. Hence, much of the school is housed in new buildings, and what little I saw is remarkably well equipped. There are approximately 5,000 students, most of whom are taking a four-year program leading to the diploma. The largest group are the mechanical engineers, followed by electrical and chemical engineers. Those who successfully graduate from the German technical high schools (the Gymnasia) are admitted without examination. Apparently, these schools are excellent and give a training close to that offered by our best scientifically oriented secondary schools.

"All German children start school at six years of age and are required to attend school for eight years. Many of them learn trades working as apprentices and going to school one day per week for a period of three or four years.

"What little I saw of Stuttgart came the closest to giving the impression of snap and drive that one feels at M.I.T. The professors are busy. The graduate students display initiative and enthusiasm, and considerable patience waiting for a few brief minutes with the professor.

"Leonhard has a small instrument business employing about ten people. He is in active contact with some of the large power and power equipment companies. Some of the theses being carried out by his students grow out of such contacts. Leonhard's courses in control are popular with the students, who can elect them in the senior year of a four-year program. Automatic control is being taught in the Mechanical Engineering Department by Professor Georg Hutarew also. Hutarew teaches the fundamentals of control, using throughout the course the example of the speed control of a hydro-electric turbine generator set. Springer has recently published a book of Hutarew's on control called *Regelungstechnik*. The course looks excellent, and Hutarew is good. None of the courses in control include laboratory work. Research is largely done by assistants studying for the doctorate." — WALTER MCKAY, Secretary, Room 33-211, M.I.T., Cambridge 39, Mass.

## 1936

Our 20th Reunion was a tremendous success. We would like nothing better than to relate all the happenings in these notes, but some space must be left for

the other classes. We will hit a few high points now, and later on during the year will fill you in as the going gets rough and no news is forthcoming. As you know, the reunion was held at the New Ocean House in Swampscott, Mass. Members of the Class put in an appearance for varying lengths of time. Those who lived in neighboring towns had to be practically escorted over to the diggin's for part of a day while others had to be dragged out of the establishment when it came time to break up. Even the quieter and more reserved members got into the act. Everyone had a good time, spent less than anticipated, and ended up so enthusiastic that they were not only talking up bigger and better get-togethers, but of gatherings on an annual basis rather than on five-year terms. You can judge for yourself just how far the thing got out of hand — several of the '36ers even pledged to send in material for the Class notes. To date we have nothing but the promises — how about it?

To get back to the statistics, it might be well to start by listing those who attended. We considered listing by all sorts of interesting characteristics, but since The Review recommends alphabetic tabulation for obvious reasons, we for once will suffer regimentation and oblige. The following members brought their wives: Oliver Angevine, John Austin, Aldo Bagunto, Arthur K. Baker, James G. Baker, Joseph E. Burns, Douglas C. Cairns, Joseph S. Chenette, John Coffin, Ben Cooperstein, William A. Cresswell, Alfred Dashburg, Richard A. Denton, William Fengerle, Harry Foster, Webster H. Francis, Jr., W. W. Garth, Jr., Bernard Gordon, Alwyn Gray, Eli Grossman, A. E. Hittl, Marshall Halcombe, William H. Hope, Henry Johnson, S. T. Johnson, Alice Kimball was escorted by her husband, Elwood H. Koontz, Roger A. Krey, James H. Leary, Jean Leman, Walter MacAdam, Walter Mathesius, David Mathias, Chester Meyer, Russell Miller, William Mullen, S. C. Nickerson, James Patterson, Lawrence Peterson, Elliott Robinson, J. B. Schliemann, Dorian Shainin, Warren Sherburne, M. B. Spaulding, Gordon Thomas, Fletcher Thornton, Jr., Michael A. Tremaglio, David Varner, John Viola, and Webster Wilson.

The following members came unescorted: Boynton W. Beckwith, Bernard Birdsall, Dana Devereau, Harry Essley, Vincent Estabrook, Richard Holloran, Larry Kanter, Roger LeBlanc, Henry Lippitt, Loreto Lombardi, Brenton Lowe, Harold Miller, Carl Olsen, Raman Ortynsky, Franklin Parker, Bill Shea, Stanley Smith, and Pyam Williams.

It goes without saying that the years have been kind to almost all of our brother classmates. They all seemed to be holding their weight, keeping their hair and china, driving more expensive cars (a few of us committee members agreed that we should probably give up hitchhiking to future reunions), raising larger families, bragging about bigger new houses and larger domestic staffs. In only one category did everyone (not almost everyone) exceed — all are prosperous and wealthy. It may prove profitable to attend the next reunion if only to collect the loans made



while at school. On the other hand, we feel it our duty to warn you of certain members who were mathematic and economic majors who have "get-rich-quick schemes" all worked out for their brothers. Also, remember that it is open season for those who have joined the ranks of the consultants—they can solve anyone's problems—and for such a small fee! It's all in fun and, really, all these rich, successful fellows are just trying to eke out a living.

Back to the facts again. The week-end got off to a good start by a sizable group arriving Friday night. After breakfast Saturday morning, the day was given over to sports events. A buffet lunch was served at noon and the cocktail party preceded the Class banquet. Following this, there was dancing. Sunday morning there was swimming, church, and sports. After luncheon, a short Class meeting was scheduled—it turned into a long one and will be covered in these notes later in the year, along with the Prize Drawing, which took place during the cocktail party in the late afternoon. The folks took their loot and headed for the shore dinner. Everyone ate much and found it necessary to rest up a bit before showing their faces at the gaming tables. Everyone gained something from the Monte Carlo Party. The committee took theirs in experience. "A great night—Monte Carlo was never like this." And Monday morning the gang formed for the mass movement back to Tech and Alumni Day. —JAMES H. LEARY, *Secretary*, One Putnam Park, Greenwich, Conn.

## 1937

Just received a report on "Soviet Machine Age—Automation in Russia," written by Dr. Albert C. Hall, general manager of Research Laboratories Division, Bendix Aviation Corporation, Dr. Weldon Brandt, of Westinghouse, and Nevin L. Bean, of the Ford Motor Company. Very interesting reading about technical progress of the Soviets. Copies can be obtained from the Ford Motor Company.

William Sangster is now working for Aerophysics Development Corporation in Santa Barbara, Calif. This is a subsidiary of Curtiss-Wright Corporation. Richard Hutchinson has been named assistant general manager for the Hapman-Dutton Company, Hapman Conveyers, Inc.

The plans for our 20th Reunion sound simply wonderful, and we are hoping to see a great many of you there. I'll be looking for those \$5 checks for back dues. —WINTHROP JOHNS, *Secretary*, 766 Hy-slip Avenue, Westfield, N. J.

## 1938

A note from George Wood says that he "... left the Underwater Ordnance Station, head of Development Department, R. I., in July to take a position at Convair in San Diego. Moved from torpedoes to big guided missiles. I am now test conductor for Site 2 at Sycamore Canyon. Mail address: Sycamore, Astronautics, Convair, San Diego, Calif."

The rest of our notes this month are based on various release and news items.

In Burlington, Vt., Wesley Cilley is active in the current Community Chest drive, holding the chairmanship of one of the three major divisions of the campaign. Shell Development Company chemist H. D. Finch of Berkeley, Calif., recently completed 20 years of service with the Company at the Emeryville Research Center. He joined Shell Development originally as a laboratory assistant in the Cracking Department. He left the Company in 1937 to take graduate study at Tech, returning a year later as a chemist in the Organic Department.

Joseph Krenn is now engineering manager in charge of automotive and aircraft applications at the Fafnir Bearing Company. His new assignment gives him responsibility for product application engineering in the automotive field, including tractors. He also supervises applications for various aircraft specialties, accessories, and air-borne equipment. He has been a member of the Fafnir engineering staff since October 1945. Previously, he was a test engineer with the Hamilton Standard Division of United Aircraft for several years.

George Thomas, a professor in the Mathematics Department, participated in the summer institute for teachers of mathematics held at Williams College this past summer. He presented a series of lectures on "Mathematics and Engineering Education." —DAVID E. ACKER, *Secretary*, Arthur D. Little, Inc., 30 Memorial Drive, Cambridge, Mass.

## 1940

Reeve Morehouse, who has been with Crown Zellerbach for some time, has been transferred to the Central Engineering Department as project engineer. This transfer required him to move from Los Angeles to Seattle with his family, including five children, which is quite a project in itself. Herb Wheeler recently was appointed manager of engineering for Stran-Steel Corporation in Birmingham, Mich. In his new position, Herby directs the design and development work on the corporation's products in the field of standard buildings, architectural products, and transportation products. Previously, Herb had been an architect for the J. G. White Engineering Corporation in New York. This past summer he attended the Creative Engineering and Product Design course at Tech.

Clement Burnap has jointed the Reynolds International, a subsidiary of the Reynolds Metals Company in Richmond, Va. Previously, he had been with Sharples Chemical and Industrial, Ltd., and before that he was European representative and later export manager of the Clark Brothers Company, a division of Dresser Industries. Another literary effort has emanated from our Class. Brooks Hindle is the author of the recently published *The Pursuit of Science in Revolutionary America*. From Sam Goldblith comes word that Phil Stoddard has recently been elected Worshipful Master of Old Colony Lodge of Hingham, Mass. He was installed on Tuesday, November 13. Congratulations, Phil!

Your Secretaries wish all members of the Class a happy and fruitful New Year!

—ALVIN GUTTAG, *Secretary*, Cushman, Darby and Cushman, American Security Building, Washington 5, D.C. —DR. SAMUEL A. GOLDBLITH, *Assistant Secretary*, Department of Food Technology, M.I.T., Cambridge 39, Mass. MARSHALL D. MCCUEN, *Assistant Secretary*, 4968 West 14th Street, Indianapolis, Ind.

## 1941

Orchids to Bob Williams, who has been selected by the Sloan Fellowship Foundation for a year's graduate study at the Institute. The award is made annually to outstanding men of various leading firms throughout the country, under a financial grant made by Alfred P. Sloan, Jr., in 1938. Its purpose is to offer one year of intensive study in advanced business management and administration to qualified men chosen from the ranks of industry. Bob started in June, having been granted a year's leave of absence from the Glenn L. Martin Company of Baltimore, where he is in the Operations Division. He joined the company in 1946, upon release from the Air Force. While in the Engineering Division of the Air Materiel Command, he attended California Technology, and holds a master's degree in jet propulsion. His most recent assignment at Martin was Operations Manager, B-57 Tactical Bomber Project. Bob and Dorothy have four children.

More orchids, this time to Bill Lifson, who has been appointed an assistant director of the Products Research Division of the Esso Research and Engineering Company, Linden, N.J., in charge of motor lubricants and wax and additives research. Bill has been with Esso since 1945, and holds several patents in the fuels and lubricants fields, and is the author of a number of papers on the lubrication of gas turbines and jet engines. Prior to his new assignment, he was a section head responsible for research on additives. Bill and Elaine live in Union, N.J. I enjoyed a visit recently from Bob Alfred, who is heading the firm of Rodé, Inc., an organization specializing in investment castings and the lost wax process, and presently employing about 40 people. He started the company in Boston in 1946, and in 1950, moved it to Woburn. Bob and Lois and their three children live in Brookline, where he spends his spare (?) time in Boy Scout work, and Lois is an elected town meeting member.

A card from Dirk Van Dongen tells us that he "... returned in June to the United States after almost ten years in the Philippines as chief engineer and production superintendent with the Franklin Baker Company of the Philippines, a General Foods subsidiary. Transferred in August to the Maxwell House Division of General Foods, in Hoboken, N.J., as process engineer." And from Art Weinberger: "Am now working for American Cyanamid Company, Stamford, Conn., temporarily at New Orleans for start-up of new plant. 'Temporary' has been seven months now, and I'm hoping to be here for Mardi Gras."

John Biggs is the author of a paper on "Vibration and Stresses in Girder Bridges," which was presented at the annual meeting of the Highway Research



Board. Colonel Frederick Cole, a graduate student in meteorology, has written an article for *Air Force* magazine, "The World's Weather: How S.A.C. Finds Out About It." Colonel Cole is now commander of the First Weather Group, stationed at Offutt A.F.B., Neb. . . . Burnham Kelly chose "This Modern World" as the title for the opening address which he delivered at the annual meeting of the American Society of Landscape Architects in Cleveland. . . . And, at the National Electronics Conference in Chicago, Bob Fano, of the electrical engineering department at the Institute, was chairman of the educational session on information theory.

In news of our graduate students, Lieutenant Colonel Mark Brown, having completed a course in jet flying in Alabama, is now meteorologist at Scott A.F.B. in Illinois. . . . Captain Frank Springer, U.S.N. has received the degree of master of business administration from George Washington University, and will be stationed at the Pearl Harbor Naval Shipyard. . . . Arthur Obermayer is now with the Chemistry Department of Tracerlab, Inc., in Boston. . . . Austin Fisher spoke before the Shatswell P.T.A. (Beverly, Mass.) on the Lexington plan, under which qualified science teachers are encouraged to enter the high school teaching field, in an effort to solve the problem of securing secondary school teachers of a caliber to encourage a real understanding and appreciation of science among the nation's young people. A worthwhile project, indeed.

The Class of 1941 should be proud of their record as members of the M.I.T. Educational Council. This Council has the objective of seeing that "more of the best students enter the Institute." The fact that our Class has the largest representation out of a total of 678 active members was recently published by Bruce Kingsbury in the October issue of *The Bulletin of the M.I.T. Educational Council*. — IVOR W. COLLINS, *Secretary*, 28 Sherman Road, Wakefield, Mass. HENRY AVERY, *Assistant Secretary*, Pittsburgh Coke and Chemical Company, Grant Building, Pittsburgh 19, Pa.

## 1942

Just five months to go until our 15th Reunion. By now, all of you should have all of the details, including the note about the special arrangements to have four Tech dinghies for our private use at the beach in front of the Chatham Bars Hotel. If the response to the Class dues solicitation is any indication, we are going to have a full house. So send your reservations in early to have first pick on the rooms. The only unfortunate note is that there are some 19 Class members whose addresses are out of date. I don't mind so much that the dues solicitation letters came back to me unopened, but unless we get word to them by some other means, they will have no information about the Reunion. Please ask any of the following to drop me a card: Arce, Berwick, Bloomingdale, Carroll, Carter, Crooks, Hanley, Helena Hoyer, Klock, Lemaire, Lindsey, MacDougall, McCarty, Parker, Purcell, Richardson, Rips, Voye, and Wingert.

Birth announcement of the month: Peggy Ann Levere on October 7 to Bernie and Zelda. Do we have any other candidates for youngest child to a reuning couple?

Congratulations to Lou Arnold. He had been cited by the Alumni Fund Board and the Institute for his outstanding work as a regional chairman for the Alumni Fund. Lou managed the campaign that resulted in 86 per cent participation among the Alumni in lower New Hampshire. Congratulations are also in order to Dan Hulett, newly elected president of the M.I.T. Club of Charleston, W. Va.

Sent with the \$3 checks have been more notes of good wishes and offers to help. By far the best travelled was from Charlie Stempf. It went out by way of Harrison, New Jersey and Caracas, Venezuela, and it came back by way of Montevideo, Uruguay. Eric Wormser and Dave Baltimore, too, are looking forward to joining us in the near future.

We close with a reminder from Charlie Speas, Class agent. "A prompt contributor [to the Alumni Fund] is thrice-blessed by your class agent, too." — LOUIS ROSENBLUM, *Secretary*, Photon, Inc., 58 Charles Street, Cambridge 41, Mass.

## 1943

This is as good a time as any for a report on the Class treasury, which I shall present in my dual role as secretary-treasurer. Following the 10th Reunion in 1953, we had a balance of \$316.16. Interest accumulations amounted to \$20.05. Disbursements were: postcards in 1955, \$9.50; 1955 salary survey, \$55.71; scrapbook, \$6.15; and 1956 informal reunion, \$14.89. The present balance is \$250.43. There will be no solicitation for Class dues until 1958, just prior to the 15th Reunion.

Malcolm S. Burton, who received his master's degree with our Class, is the author of a new textbook on *Applied Metallurgy for Engineers*. Professor Burton is on the faculty of the Cornell University School of Chemical and Metallurgical Engineering. Latest classmate to join the ranks of cap and gown is Bill Laird, who was appointed a professor in the Mathematics Department at the University of Pittsburgh. Professor Laird was at our informal reunion last June in Cambridge, but he was merely a layman then. Good luck in your new work, Bill!

Those who received the report of the 1956 Alumni Fund may have noticed that our Class had one of the highest per capita contribution averages, for which we can be justly proud. The Fund is expanding its field to try to get more Alumni to contribute. This is being done by personal calls in various regions, and is working out well. Some of our gang are active in this work.

This month has been a low point for letters and news, probably because it is about halfway between reunions or because of the national elections. In any event, I manage to glean information for the notes every month, and I haven't missed an issue since I started in 1952. If there is any news for me, send it in, please. — RICHARD M. FEINGOLD, *Secretary*, 49 Pearl Street, Hartford 3, Conn.

## 1944

"Dear Jim: When you called me last month (October) and asked if I would substitute for you for a while in handling our Class notes for *The Review*, I had hoped to be able to bring forth a masterpiece for the December issue, there being a good backlog of news from which to work. Labor relations, even in a small company, is an ever-changing and often unpredictable, or not fully controllable matter, however, and when urgent union problems arise everything else, including Class notes, must wait. In handling this reporting assignment, as you know better than any of us, one has to depend for material on the letters, cards, phone calls, and other contacts from members of the Class at large. So I am going to put you down as a regular source of information, and the same holds true for others, here to remain nameless, who have news about themselves or classmates. Don't keep it private! Pass it along!

"Having faced a shortage of news material in a similar assignment in recent years, I have been wondering, for that matter, whether there might not be other types of material which could fill the space allotted to our Class. Not that we wish to compete with the feature pages of *The Review*, but if someone has something he'd like to say, if he has some interesting information he'd like to pass along to the Class, or if he'd like to raise some questions and stir up some friendly controversy, well, maybe we can put it in shape for inclusion in the Class column. Any reactions to this somewhat fuzzy idea will be welcomed and printed — maybe!

"Jim, it is really great to hear that your magazine publishing venture with *Electronic Week* has been so successful. I believe you said that your circulation is the largest in its field, and that the Hayden Publishing Company is about to launch a second publication in the field, dealing with problems of management. It is easy to understand why at this point you are up to your ears and in need of a temporary leave of absence from the Class secretaryship. By the way, I'm sure those of us who do not receive them would like to see sample copies of your new magazines. As one who has read your Class notes in the past, and who knows the effort you have devoted to them and other Class projects, may I thank you on behalf of the entire membership and say we look forward to your return from this temporary leave of absence. Sincerely, Ken Scheid. P.S. Hope that your recent European trip included pleasure as well as business."

In great part the result of the customarily fine organizing efforts of Scotty Carpenter, the impromptu joint reunion of the Classes of 1942 through 1945 was a real success last June. We were informed that this off-year type of reunion was an innovation in Institute class activities, and everyone who attended, including a good representation from our Class, would like to see others planned for coming years. Naturally, the majority of the group came from the Boston area, but as the idea catches hold, more and more of you from other areas ought to try to get up here

for this sort of reunion occasionally. Informality was the pattern, both at the Saturday evening dinner and the Sunday afternoon clambake in Ipswich. John and Vi Granlund were our bar companions Saturday evening at the Faculty Club, and since Minette and I were expecting our first addition while they were anticipating their fourth, we were able to talk to some professionals on the subject. (Both were girls — summer arrivals.)

Cort Ames advised us of young Stephen's arrival in May, the Ames clan now includes three boys. Cort told us all about it when we were finally able to see him again in October, after five years. Since early this year Cort has been a member of the San Francisco staff of McKinsey and Company, management consultants, and his assignments occasionally bring him into other sections of the country. No conversation between the two of us goes very far without reaching the subject of politics, and Cort was able to give us a good argument for Eisenhower and Nixon from his experience with Citizens for Eisenhower and with the Young Republicans in San Francisco. Let it be noted, however, that we drove him from Tarrytown, N.Y., into Connecticut in a car — ours — clearly marked with opposition stickers. Cort and Dorie have just moved into a new house in San Mateo from their former location on San Francisco's Twin Peaks, and Cort says the welcome sign is out. Also this fall, another one of our Eastern migrants to California, George Quisenberry, with Clara and one-year old Bruce, were visitors in New York, and since George was paying the phone bill, we talked from Marblehead at length. The Quizzes have now located permanently in Palo Alto, and George reports that packaging equipment, for which he is a manufacturers' agent, is selling well on the West Coast. George and Cort both reported having seen Stan and Jean Smock when they were visiting California from their home base in Texas, and Cort also reported having been guests of King and Pat Cayce in Cleveland while on a trip east, and also of seeing John and Betty Hull in Ivyland, Pa. John's new venture with the Hull Standard Company has apparently started off well, and if John will oblige, in a future issue we will have a further report giving some details.

Three of our more stalwart bachelors have changed affiliation in the past months. Paul Bishop and Phyllis Peters were married in April and are living in this area, where Paul is a design engineer with the F. S. Payne Company. In July, Gil and Dorsie Krulee were married in the chapel at Tufts University, where Gil was a visiting member of the Psychology Department for part of the summer. Gil and Dorsie later left to return to Cleveland, where he is associate professor of industrial relations at the Case Institute of Technology. Finally, in late September, Ray Wilding-White and Glennie Brown were married in the Appleton Chapel at Harvard, and are now living in the Harvard Square area. Ray remains very active in the fields of TV and FM-radio program production and direction, as well as continuing his music composition efforts, and another of his choral works was performed this past summer at Tanglewood. All of

Ray's creative work, whether in TV, FM, or music composition, is marked by a strong degree of artistic originality, a talent which could well have been lost in engineering.

For a number of years, Tom and Lyn Jackson have talked about traveling off to see some of the world. I can remember a time — before the arrival of the first of their four children, their two Old English Sheepdogs, their Persian cat, and their 30 acres of land in Hopkinton, Mass., on which they built themselves a beautiful house — when their objective was to sail off in a Nova Scotian auxiliary sloop for points south and west, and my brother Bob '48, and his wife, Jane, were considering joining them to make it a foursome. Last February, Tom and Lyn finally made it, to Tegucigalpa, Honduras, where Tom is associated with an Arthur D. Little economic development project for the Honduras government. Tom has been on the Little staff since 1948, one of a rather large number of recent Tech graduates now with this organization, which has more than tripled its staff in the past eight years.

Another member of our Class who is a more recent addition to the A. D. Little group is Arthur "Bud" Bryant, a member of the client contact (or may we say "sales"?) staff. Bud previously was associated with the Institute administration, and he remains very active in Alumni matters as chairman of the Steering Committee of the newly-formed Fraternity Advisers Group, of which Herb Cantor is also a member, and I an alternate member. Also serving on an assignment in Latin America is John Matthews, who has apparently returned again to Venezuela with the Creole Petroleum Corporation. On the other hand, Roger Christiansen has recently returned from Tokyo, where for eight years he was with the First National City Bank of New York, to become manager of the Foreign Trade Department of the Marshall and Ilsley Bank, Milwaukee.

Those of you in the New York area who watch TV Channel 11, WPIX, can thank Lev Pope for the excellent sports and local coverage given by this New York *Daily News* station. Lev is operations manager and assistant to the general manager, and is responsible for the station's day-to-day operations and sports schedule. Recently, WPIX was singled out for commendation by Jack Gould, television reviewer for the *New York Times*, in a column critical of the national networks for failure to give prompt and adequate coverage to the first emergency United Nations sessions dealing with the Middle East and Hungary, and presumably considerable credit can go to Lev for this public service. He has been associated with WPIX since 1951, and with the *Daily News* since his graduation in 1947. Lev is the father of five and lives in New Rochelle. One of his Westchester County neighbors, I believe, is Carroll Boyce, who has been on the staff of *Factory Maintenance and Management* for a number of years and is now an associate editor for this McGraw-Hill publication.

New appointments in the world of business include Gil Murray's promotion last May to head up sales activities for

the Western District of Western Knapp Engineering Division of the Western Machinery Company. Gil took his master's degree from Tech in metallurgy following his undergraduate work in Course X, and thereafter served as an engineer with the Atomic Energy Control and then Allis Chalmers before joining Western Machinery in 1954. His division specializes in all phases of engineering and construction work for the mining and processing industries, ranging from preliminary engineer studies to complete jobs. Bill Bommer, president of the Acushnet Process Sales Company, was elected in May to the Board of Directors of the parent Acushnet Process Company, New Bedford, Mass. Bill is also a vice-president of the parent company. He lives in South Dartmouth and is the father of three daughters. Bill Barber reports that he is now an assistant project engineer with the Aerophysics Development Corporation, Santa Monica, Calif., assigned to work on "a missile system."

In the world of education, we are advised that Dr. Jack Uretsky has recently joined the staff of the Radiation Laboratory at the University of California, Berkeley, having formerly been at the Institute. Richard Maffei, on the other hand, in September began his second year on the Institute faculty in the School of Industrial Management. Paul Kase reported last spring that he held a research assistantship in the Aeronautical Engineering Department, working in the Wright Brothers Wind Tunnel, and that he was doing graduate work in Course XVI. While these two following bits of information from the world of the military may now be obsolete, it was interesting to learn that Art Plaut and Frank Laurenzano were still wearing Navy uniforms, as lieutenants, in 1955, and Art was even apparently assigned to recruiting duty in Seattle.

To close this long, overdue report, I regret to report the death of Don Parr on April 13, 1956, in the crash of a private plane near Harrisburg, Pa., in an unexpected snow squall. Don was one of three passengers killed, as was the pilot, all of whom were flying to Syracuse on business. Don, who graduated from Tech in Course XVI, was associated with his father and brothers in an oil heating firm in Lebanon, Pa. He is survived by his wife, Betty Jane Parr, three daughters and a son. — KENNETH G. SCHEID, *Acting Secretary*, 24 Lee Street, Marblehead, Mass. JAMES S. MULHOLLAND, *Secretary*, 19 East 62nd Street, New York, 21, N.Y.

## 1945

Happy New Year's Resolution! It is hoped that you have all resolved to write at least an annual postcard to your Class secretary informing us of your where-and-what-about. If you haven't heeded the advice of Al Oxenham, our Class agent, how about getting your check off to the Alumni Fund today — it most certainly is an excellent cause; furthermore, it is tax deductible!

Vince Butler, our roving ambassador from San Francisco, spent a couple of weeks in New York in early November attending a National Association of Manu-



facturers seminar on mergers. Needless to say, it was a pleasure to have an opportunity to "break bread" with one of our surviving gay bachelors. Vince, as all you tenth reunion attenders can imagine, still bubbles with energy and enthusiasm, although he indicated that he was tiring of the traveling — not the gay bachelor's life! During one of his frequent plane hops, Vince chanced to see J. J. Strnad at the Cleveland Airport. From all reports, it was a long wet evening, for after a tour through J. J.'s many Cleveland plants, Vince, Edna and J. J. Strnad spent the night gabbing. While in the East, Vince spent one weekend checking the Phi Gam House and Boston campuses, the second weekend at West Point with Captain Hillman Dickinson '46, presently on instructor duty at the Point.

Wesley E. Dickinson, who received his master's in electrical engineering with our Class, went into aircraft electrical systems and guided missile work upon graduation. Joining International Business Machines in 1952 as an associate engineer, he worked on analog and digital computers and on electrical printers. In 1954, he was assigned to the Random Access Memory project; one year later, Wes was promoted to project engineer. While on this general subject, how many of you saw that Dr. Jay W. Forrester, one of the nation's leading engineers in the design and application of large scale digital computers, become professor of industrial management at M.I.T., effective last July? Jay, as head of the Digital Computer Division of Lincoln Laboratory, guided the technical design of the SAGE system of continental air defense. Jay has been with the Institute in one capacity or another since 1946, first as associate director of the Servomechanism Laboratory, where he was responsible for the design and construction of Whirlwind I, M.I.T.'s first high-speed digital computer. Since 1951, while serving as division head of the Lincoln Laboratory, Jay continued as director of the Digital Computer Laboratory. Dr. Forrester holds a number of patents in the field of computing machines and is the author of many widely known technical papers.

Alice Loomis Hendrick, daughter of the assistant to the secretary of the treasury, of Washington, and Willow Brook Farm, Bayard, Va., was married to James S. Hardigg on October 20, 1956, in Christ Church, Washington, D.C. The couple is living in Hamilton, Mass. Dr. Allan G. Mencher has joined the Guided Missile Research Division, The Ramo-Wooldridge Corporation, Los Angeles. Dr. Mencher recently returned from Switzerland where he spent a year and a half on a research fellowship in solid state physics. Previous to this, he was instructor in physics at University of California, Los Angeles. Sidney H. Greenfield of the National Bureau of Standards recently completed additional extensive tests on the durability of asphalt roofing materials containing asphalt additives. Judging from the references enclosed with the article, it would appear Sid has been carrying on much research in this field with the Asphalt Roofing Industry. Since I am in the market for a new roof, the article proved most interesting to us. That's it for now. —

CLINTON H. SPRINGER, *Secretary*, Firemen's Mutual Insurance Company, 420 Lexington Avenue, New York 17, N.Y.

## 1946

Happy New Year to all. I suppose that by the time you read this everything will be back to normal after the holiday festivities — everything, that is, except the balance in the checking account. I can't help you in that department, but I do have some late news about fellow sufferers of '46, so read on. First, a few items from the M.I.T. news clipping service. Major Marshall Waller, who first graduated from the U. S. Military Academy in 1942, and then from M.I.T. in 1946, has recently been graduated from the Command and General Staff College at Fort Leavenworth, Kansas. From a news release of Arthur D. Little, Inc., we learn that Robert W. Gardner has recently joined their staff. After graduating from Tech, Bob was a staff member of the M.I.T. Fuels Research Laboratory for three years. He has also been associated with the Allied Research Associates in Boston, and the General Electric Company in Lynn, Mass.

In order to meet printing deadlines, this third column of the year is being written before the first column even appears in print, so I still don't know what response my appeal for your letters will draw. However, Howard Perlmutter's Alumni Fund appeal letter, out only two weeks, has already produced results as far as this column is concerned. Questionnaires included in his letter are already rolling in. The first to arrive was from Ralph W. Reynolds. Ralph matriculated with us at M.I.T. but, after a year or so, he transferred to Columbia College, N.Y., where he received his A.B. in 1946. He then earned his B.D. from the Andover Newton Theological School, Newton Centre, Mass., in 1948. He is currently at work on his S.T.M. (Master of Sacred Theology) and Th.D. (Master of Theology) at Harvard. Ralph is associate minister of the First Baptist Church in Medford, Mass., after having been a minister in churches in Southborough, Mass., and Derry, N.H., as well as serving for a year as instructor in Biblical History at Wellesley College. Ralph was married in 1947, and he and Frieda now have two girls and a boy.

Clarence S. Lyon writes from Strawberry Hill Avenue, Norwalk, Conn. He worked at M.I.T. as a research engineer from 1950 to 1952, and then shifted to the M.I.T. patent office for two more years. He must have been putting in long evenings during this period because he received his LL.B. from Harvard Law School in 1954. He then became associated with the law firm of Blair and Spencer in Stamford, Conn., and in 1956 was made a junior partner in the firm. His law specialty is patents and trademarks. Clarence married Patricia in 1948, and Claire Patricia was born in 1951. Clarence has been active in the Connecticut Young Republicans, and apparently quite successfully, judging from Connecticut's vote in the last election.

Edwin A. Schlang writes from 2425 East 28th Street, Brooklyn 35, N.Y. Ed

is chief chemist for Waljohn Plastics, Inc., of Brooklyn. They specialize in extrusion and injection molding of thermoplastics. Ed married Irma in 1947, and their two daughters are Barbara, aged six, and Carin, age two. Robert J. Nolan lives at 17 Plymouth Avenue, Maplewood, N.J., and works at the International Terminal Operating Company, Inc. He is married and has one child. Bob expects to graduate this June from Seton Hall University, School of Law, where he has been in attendance at night for the last five years. John R. Perry lives at 12 Hog Hill Road, Peabody, Mass. He has been at General Electric since 1947, and is working as a development engineer on navigational components, developing gyroscopes, accelerometers, gyro-stabilized platforms, etc. John married Maude in 1946, and their two children are Andrea, aged four, and Carolyn, aged three.

Stanley James Goldstein lives at 29 Luddington Road, West Orange, N.J., and for the past three years has had his own professional offices, architecture and engineering, in East Orange. He received his S.M. and B.A. in architecture from M.I.T. in 1948 and 1949, respectively, and is a member of the American Institute of Architects. He is on the Technical Advisory Committee, Standard Building Code of N.J. Those of us who read the architectural journals have probably seen his articles in the *Journal of American Institute of Architecture*, the *Journal of American Concrete Institute*, as well as *Progressive Architecture*. Stan is married and has two boys; Roger, age four, and Eliot, age one.

Nicholas Grossman lives at 72-10 Thirty-seventh Avenue, Jackson Heights 72, N.Y., and works at the Atomic Energy Division of Sylvania Electric Products, Inc., Bayside, N.Y. He is a section head in charge of design and testing in the division which is engaged in nuclear fuel element development and fabrication. He is vice-chairman, Metropolitan Section, Society for Nondestructive Testing.

I should like to take this opportunity to thank everyone who has sent in a letter, or questionnaire. As noted above, there is a time lag of about two months between the writing of a column and its arrival on your doorstep, so if your information hasn't been used yet, please be patient. It will, and soon. — JOHN A. MAYNARD, *Secretary*, 15 Cabot Street, Winchester, Mass.

## 1947

Is my face red! Trusting in the vagaries of an imperfect memory, I blithely recalled to one and all, in the letter announcing our Tenth Reunion, that graduation day for us was June 11, 1947, when — as any fool should plainly know — it was Friday, the 13th. Not everyone was asleep at the typewriter, however. Phil Jones, in returning his \$10 Class dues, was tactful in his note: "A good letter, Claude, but it was Friday, June 13. My birthday, to be exact." And Bob Aquadro was only a little less so, when he sent his dues in with the note: "Are you sure that Friday, June 11 is correct? Try Friday, June 13." Now all rush to check your diplomas, to verify that we were indeed



irrevocably graduated from the Institute on Friday, June 13, 1947! With that basic fact established, there is now no longer any excuse for any one of you to be absent from our tenth anniversary celebrations at the Hotel Curtis in Lenox on the 8th and 9th of this fast-approaching June. (A *non squitur* if I ever wrote one — but we must get in the plugs.) You will be apprised by regular mailings of the steps you must take to assure an early and choice reservation at the hotel for you and your wife.

The response to our request for Class dues to help support the mechanics of organizing a reunion week end was most encouraging — not only from the standpoint of the number of contributions, but also for the number of you who were prompted to bring us all up to date on your doings over the last nine and a half years. Don Cottle was very succinct: "Enclosed, my dues. Only 50-50 chance that I can make the reunion. Personal news: married, three children. Still work for General Electric as project engineer in automation for Semi-conductor Department." Jerry Cox was a little more generous of his verbiage: "I had been anxiously awaiting news of plans for the Tenth Reunion. Therefore, your letter of 23d September was very welcome. I enclose my check for the Class dues. But I anticipate that this is not the last time you will approach with outstretched hand. As you see, I have migrated back to the Midwest. My wife and I (plus two children) find that St. Louis agrees with us very well. I am sorry, however, that I am not in the Boston area to lend a hand with the plans for next June." Ben Craig sent a terse sentence: "Boston is a far distance from Alabama — sorry I can't come."

Bob Devine wrote: "It would seem to take a five- or ten-year reunion to wake some of us up — myself included — but having awakened, let's hope that while we may be tagged as 'slow starters' we will also prove to be 'fast finishers.' This is just a thank you note for your yeoman service to the Class of '47, and a reply to say that I will plan to attend the 10th reunion in June. I'm enclosing my check for 5 'Truman Dollars,' (i.e., \$10), as my entry in our new 'Student Movement.' See you in June, I hope, I hope. P.S. I don't have a wife as yet, so my reservation will be a single one, though I must admit to being a bit chagrined at showing up at a tenth-year reunion without a life's companion." Don't worry, Bob, there are several of us who will be making single reservations for the week end. Alex Giltinan, who will be making a double reservation, replied in reference to our June graduation: "I left under a cloud, doubting that I would get a certificate in February of that year. (It was mailed out.) This collection of hard-working dorm men inspires my '47 affiliation. The bride indicated some interest in coming to a Tenth Reunion."

As always, the ladies can be depended on to fill in for their too-busy husbands. Ruth Phillips Johnston, who used to edit these Class notes for The Review before she married Russ Johnston, wrote: "Remembering the hard-working secretaries' appeals for reunion funds from classmates made during the years I spent in The

Review office, I cannot now hesitate to send along the enclosed, with the hope that all who are interested in '47 will realize that class secretaries and agents can't make a complete success of class reunions and class notes by themselves — although it always did amaze me how well they did with the little they had to work with at times! I have hesitated to send in news of Russ's activities, because he was affiliated with '47 as a graduate student and, therefore, he feels that the majority of the regular students wouldn't be interested. But, if you are *really* anxious for a bit of news to fill space in class notes some time in the future — well — here goes:

"Russ is an associate professor of civil engineering at Lehigh University here in Bethlehem. We purchased a Pennsylvania Dutch stone schoolhouse out in the country several years ago, and after much trial and error, but a great deal of fun, we have remodeled it into a cozy six-room house. One special delight is our fireplace made of stones cut from the Blue Mountains here in Pennsylvania. In 1954, our son, Russell III, was born and, believe me, it is really something keeping pace with the antics of an active two-year-old. A few years back, Russ was working on designs for A-bomb shelters for the Federal Civil Defense Agency, and was an observer at one of the bomb tests out in Nevada. This past fall he and a fellow Lehigh professor have had a two-volume book published by McGraw-Hill, entitled, *Mechanics for Engineers*. And I think that about brings us up to date. Best wishes for a successful Tenth Reunion. Wish we could be there, but Lehigh has classes until late in June, and we may not be able to get away by then. Always enjoy reading the '47 Class notes, Claude — keep up the good work."

Harl Aldrich was positive as could be: "Count on me at the Tenth Reunion. And then in a postscript: "Reunion must *not* be stag." Another on the distaff side who did the honors for her husband was Skip Cavanagh, writing for Ed: "Scarcely seems like ten years have passed, but there's no doubt that they have. We'd love to come — only hope we can. It's a long, long way from Arcadia, Calif., to Cambridge, Mass., so I am not sure that we will be able to do so. Ed was named an associate in the firm of Booz, Allen, and Hamilton, management consultants, last October. He likes his work very much. Beyond that we are going along nicely with home and family." Hugh Flomenhoft replied with: "I sure hope we can make the reunion, but it is completely uncertain for us right now. We'll see later. Good luck on working out all the arrangements for the reunion."

A letter written on the stationery of the Biltmore Hotel in Los Angeles came from Ed Kane: "I got your letter just as I was departing for a trip to the West Coast and figured that there would be lots of time for me to write you while out here, and so I took the letter with me. You'll have to wait for the \$10 till I get back home, however. In the meanwhile, I thought I would bring you officially up to date on my activities. I am now the father of a handsome 20-months old son who resembles his mother! He seems to

have a flair for theatrics (like his old man), and so I entertain fond hopes of his participation in the M.I.T. Show (with the music perhaps written by a Judson, Jr.). Jackie (Simmons, '49) is teaching school — primarily to keep busy while I travel. As for me, I am presently a sales manager for the Cuneo Engineering Corporation in Meriden, Conn. I am primarily concerned with our efforts in the nuclear, process, chemical and aircraft industries (which brings me to Los Angeles at the present time). Hiding behind the veil of quasi-technical importance, I have given papers before some learned groups such as the American Chemical Society, A.I.Ch.E. and the Society of Automotive Engineers, which groups cover the Company's interests in filtration, transpiration cooling, and boundary layer control. After hours, I am attending night school, and most recently was made secretary of the Hartford M.I.T. Club. I hope this makes up for a year's lapse of writing, and till then, I look forward to seeing you and the rest of our Class at the reunion."

John Kellett came forth with: "Haven't much of any news since I'm still a bachelor, and still working for Esso. I am now head of the Licensing and Plant Analysis Group in Esso Research and Engineering Company. Haven't seen much of the Class of '47 except my erstwhile roommate, Rufe Franklin, who is now in the Patent Department of Behr-Manning Corporation, in Troy, N.Y. Haven't discussed the reunion with him, but living so near Lenox, he has little excuse for not going. I have more excuse, but plan to attend anyway." From Fort Atkinson, Wis., Walt LaForce writes: "I can't see how I'll be able to make the reunion, but it's always possible. We've been in Wisconsin for a year and a half now, and I'm enjoying it, although I can't say as much for the wife who still prefers Massachusetts, for some strange reason. One just doesn't go around shooting ducks in Boston. I'm with Thomas Industries, who make the 'Moe Light' fixtures, paint sprayers, and power saws. My job is engineering manager of the Wright Power Saw and Tool Division, and we make a pneumatic saw and a reciprocating-blade gasoline-engine-powered saw that is going to put the chain saw out of business." Alex Ward joins the ranks of those who are thronging to Lenox in June with the simple: "We hope to be there."

And having the last word is Art Schwartz: "First, let me reprimand you for a most inaccurate initial sentence in your September 23d appeal-for-funds letter. How could anyone in the Class forget that we were graduated on Friday, the 13th? And just to make certain I wasn't completely senile, I checked the 1947 *Technique*, on the cover of which is our picture in the Boston *Herald* — Norm Holland, Don Van Greenby, you and I, under date of Friday, June 13, 1947. Not much new — still doing a lot of traveling, and I haven't settled down yet." Others who have forwarded their dues as of the present writing are Al Richardson, Mike Rosar, Sid Grob, George Katz, Phil Solomon, John Martin, Steve Dieckmann, Don DeWitt, Kaethe Haddox, Hunter Bennett, John Karmazin, Marty Schwartz, Ethel Kyle, Carol Tucker, Jack Rizika,

Joe Nowak, John Murphy, Dave Knodel, and Dick Turner.

In other news received from other sources, the Army seems to have recognized the worth and ability of a number of our classmates, as witness these items. Colonel Milton Barschdorf has been assigned as district engineer for the U.S. Army Corps of Engineers at Vicksburg, Miss. Prior to this assignment, Colonel Barschdorf was assistant division engineer of the Lower Mississippi Valley Division, and secretary of the Mississippi River Commission. Colonel Sears Coker has been assigned as assistant district engineer of the Eastern Ocean District. His last previous appointment was to the U.S. Military Academy, West Point. Also assigned to duty with the Eastern Ocean District is Lieutenant Colonel William Starnes, who takes the post of assistant chief of operations. Colonel John Allen is currently attending a ten-month course at the Industrial College of the Armed Forces at Fort McNair in Washington, D.C., and recently graduated from the Army War College at Carlisle Barracks, Pa., was Colonel Harry Woodbury. Awarded the M.B.A. degree from Harvard Business School was Marc Jartman, a Captain in the U.S. Army Ordnance Corps, who has now been assigned as procurement officer in the Boston Ordnance District. Prior to entering Harvard, Marc was special assistant to the deputy chief of ordnance in the Pentagon.

In civilian educational matters, we learn that Fred Howell was graduated from New York University last June with the M.B.A. degree. Ed Rosenberg, who formerly taught high school in Chappaqua, N.Y., is now an instructor in the social science department at Danbury Teachers College, Conn. Ed has an M.B.A. from New York University and an M.A. in teaching from Columbia. Dan Kiely, a senior partner in the Providence firm of D. J. Kiely and Associates, has been appointed a lecturer in architecture at Rhode Island School of Design. Promotions have gone to Ed Bennett, as assistant professor of psychology at Tufts, and Dan Sobala, as associate professor of engineering at the University of Massachusetts. Bob Eppe has joined the staff of Arthur D. Little, Inc., and Merck and Company, Inc., have promoted Martin Judge to department head of the Cortone factory of the Cherokee plant in Danville.

Once again it is my unhappy duty to inform you of the death of two of our classmates. A note from his wife tells of the passing of Gilbert E. Klein last August 20 of a heart attack. Maurice S. Bernstein passed away on November 8. —CLAUDE W. BRENNER, *Secretary*, 100 Memorial Drive, Cambridge 42, Mass.

## 1948

The news received during the past month has been rather sparse, with most of it in the form of communiques from the M.I.T. News Service. One letter was received, however, from Herb Kindler, who very kindly writes to report two events: the birth of one son, David, and his sister, Peggy, who arrived within two minutes of one another. They were born January 19, 1956, in Oklahoma City — a

happy first birthday to you both. Having broken the ice with these items, Herb then goes on to provide information on some of his activities since graduation.

"Upon graduating, I worked for the J. P. O'Donnell engineering firm, where I first became interested in instrumentation. I joined the engineering department of Brown Instrument Division of Minneapolis-Honeywell in Philadelphia, and later applied much of the instrument experience acquired at Brown to chemical petroleum processes at Catalytic Construction Company, also of Philadelphia. It was in Philadelphia that I married Miss Phyllis Pitegoff, graduate of the Stella Elkins Tyler School of Fine Arts. Prior to our marriage, she was president and partner in the Hanco-Piday greeting card firm, which designed and manufactured silk-screened cards for industrial firms.

"In 1954, I moved to Oklahoma City to work for Black, Sivalls and Bryson in their Oilfield Division. I recently left as section head of gasoline plant engineering to accept the position of director of technical programs with the Instrument Society of America. My present position entails guiding and coordinating the activities of three I.S.A. Divisions: Standard and Practices Division, Technical Division, and Industries Division. A moderate amount of traveling is involved, which I hope will give me the opportunity to renew some old Tech friendships."

From the U. S. Army we received three announcements: Lieutenant Colonel John L. Wilson, who received his master's degree in 1948, graduated this past year from the Army War College at Carlisle Barracks, Pa. He was among the 200 senior officers of the armed forces selected because of his broad military experience for a ten-month course at the army's highest educational institution. Colonel Pierre V. Kieffer, Jr., was graduated from this same course in June, 1956. Major Norman Pehrson recently was assigned as an instructor in the department of military arts and engineering at the U. S. Military Academy at West Point.

Also, in the educational sphere, we have learned from the University of Delaware that Elton Hammond was awarded his master's degree in mechanical engineering in June. Word has come to us that Oscar Seawell, after four years of teaching civil engineering at the University of Idaho, has gone back to the Nuclear Industry as senior engineer, research, in the implied mechanics unit of the general engineering group of Atomics International at Canoga Park, Calif.

Dick Linnell is now a staff scientist with the Scientific Research Laboratory of Convair, a division of General Dynamics Corporation in San Diego, Calif. Charles Steffens is also employed in the aircraft industry, and has recently been promoted to assistant project engineer for Pratt and Whitney Aircraft in East Hartford, Conn. Bernard Gordon, who is with Epsco, Inc., of Boston, delivered an address before the National Telemetering Conference in Los Angeles on "An Integrated Sub-Miniature Digital Airborne Ground Data Transmission System."

If anyone reads these notes, your secretaries write them with great pleasure. Otherwise, the literary exercise is super-

fluous. If you do happen to see this plea, how about dropping us a few lines, even if only to say that you are aware these Class notes exist. — WILLIAM R. ZIMMERMAN, *Secretary*, Moraine Paper Company, Division, West Carrollton, Ohio. RICHARD H. HARRIS, *Assistant Secretary*, 26 South Street, Grafton, Mass.

## 1950

There comes a time in every reporter's life when he has to quit procrastinating and start producing. For my faithful following who have been searching the back pages of *The Review* this past year and found naught from '50, I apologize for the lack of material. Needless to say, there were reasons for this non-production of news — but no excuses now. I'm back in the saddle again and to quote that chubby comedian who fills up your TV screen on Saturday eve, "Away we go."

I am still with the Park Construction Co. I've just broken ground for a \$2,000,000 hospital building in Medfield, Mass. Just as in other parts of the country, the construction business here in Boston is really booming. As for the Weaver's home life, we have our own home in Bedford, Mass., and lots of fresh Bedford air for our three youngsters: John, three, Cathy, two, and Melissa, one. Being a typical suburbanite, I have about 37 do-it-yourself projects now under way with nary one of them near completion.

Now for some news of the rest of you kids. Some of these items may be old hat (gathering dust on my desk), but bear with me this month and from now on only the real hot news each month. This year's prize of one month's supply of Gerber's baby cereal goes to Jim and Jean Lydon of Lexington, Mass. Joseph Thomas Lydon weighed in at a husky 11 pounds, 14 and one-half ounces on December 14, 1955. Jim was no lightweight while at school and, according to the grapevine, he's crowding the 280 pound limit now. Young Joe has two brothers and a sister to teach him all the things he's not supposed to do while growing up. Dick Bersin is proud as a peacock over Joshua Morris, born May 21, 1956. Robert Ernst Wohler, Jr., arrived on April 23, 1955. He is Bob and Helen's first boy but their third child. Bob is working for Poloro, Inc., and living in Norwood, Mass. Other new citizens of '50 are: Katherine Therese to Phil and Jean Byrne, on March 9, 1956; Nancy Elizabeth to Jack and Liz Cord, on June 12, 1956; Susan Ann to Dan and Peg McGuinness, on March 26, 1956; Linda Susan to Sal and Vera Marshall, on February 4, 1955; Janet Elizabeth to Tom and Lois Godfrey; Donald Huntley to George and Phyllis Spaulding, on December 15, 1955; David Scott to Roy and Lyn Hale, on July 16, 1955; and Steven Alfred to Dot and Jack McKenna, on October 26, 1956. Congratulations to all the proud parents.

A quick glance around the alters of the country show that the bachelors in our Class are slowly diminishing in number. The following couples exchanged "I do's" recently: Alice D. Johnson and Ralph E. Anderson; Grace Lander and Rudolph W. Billings; Eleanor Ann Fair and John Francis Brown, Jr.; Edith Kabelle and



John Hirst Barker; Noriko Chiwaki and Robert A. Clement; Doris Stone and Maurice Charloft; Catherine Amelia LeVan and Howard Parks Bill; Constance Cullman and James Broderick; Carol Ray and Edward Berninger; Ruth Blottman and George Robert Chippendale; Mary Newcomb Gilman and Edward Cornell Clark; Katherine Gulick and Stephen T. Fricker; Audrey Golden and Herbert L. Hochberg; Marjorie Ann Jones and Fred R. Messina; Elizabeth Hoy and Charles E. Hepner; Patricia Montgomery and James T. Jensen; Janice Alezander and Anthony Kriebel; Rosalind O'Brien and Thomas McLeer; Mary Ann Ramsay and Robert L. Miller; Eleanor Louise Smith and Philip K. Pearson, Jr.; Mildred Anne Bernard and James R. Turner; Susanne Robbins and Bradford C. deWolf; Elizabeth Quimby and Curtis Chandler Williams, 3d; Cynthia Johnson and Harrison White; Douglass Louise Robertson and Daniel Ziedelis.

Harry Fodey joined Arthur D. Little, Inc., in November 1954, in their Process Engineering Group. In April 1955 he went to Baghdad, Iraq, to work on an industrial survey being conducted in Iraq by the Arthur D. Little Company. He stayed on as their representative to discuss work, and report with the Development Board of Iraq. It is all part of the United States Point IV Program. Dick Lemmerman is still with Industrial Sound Control, but it was recently bought by the Koppers Company, Inc. He is now managing the I.S.C. Division of Koppers Company Metal Products Division, located in Baltimore, Md. Roger Graham is still with Rohm and Haas in Philadelphia, doing basic research in polymer chemistry. Ed Cohen is now an assistant professor of chemical engineering, and director of the Parlin Station of the M.I.T. School of Chemical Engineering Practice. Dave Gushee is working for American Chemical Society applied publications as assistant editor, working out of the Washington, D.C., headquarters. George Krusen left Davison Chemical Company, Division of W. R. Grace and Company, in July 1956, after spending three years in process development work and in design of industrial experiments. He is now with the research department of the Bay State Abrasive Products Company in Westboro, Mass. Earl Adams moved back to New England after spending over five years working for Douglas Aircraft Company in Los Angeles. He is currently employed at Hamilton Standard as assistant project engineer on aircraft air-conditioning systems. Ed Larson has moved from New Mexico to Los Angeles to start work in the computing group of Convair. Don Miller has joined the Retail Division staff of Cresap, McCormick and Paget, management consulting firm of New York, Chicago, and Washington. In his new position, Don will work with the division specializing in counsel on management problems to retail, wholesale, warehousing, and service organizations. Don formerly was assistant to the vice-president, operating services of Stop and Shop, Inc., a New England food chain.

Roger Smith has recently joined the technical staff of the Ramo-Wooldridge Corporation in Boston. Jim Staikos served

his hitch in the Army and just joined the Arthur D. Little Company in Cambridge. Tom Howitt has been appointed a supervisor of machine development in the mechanical engineering department of the Corning Glass Works. Tom joined the Parkersburg, W. Va., plant in 1950 as an equipment engineer. In 1952, he was appointed a machine designer in the mechanical engineering department at Corning—a post he held until his recent promotion. William Wallace Lawrence, Jr., has been promoted to project engineer in the International Business Machines Research Laboratory at Poughkeepsie, N.Y. In his new position, Mr. Lawrence is in charge of Magnetic Core—Memory Development work in the component Research Department. He joined I.B.M. in 1950 as a customer engineer at Boston, and was transferred to the Poughkeepsie Lab in 1952, as technical engineer. He was promoted to associate engineer in the Component Research Department last year, the position he held until his recent advancement. Bill is living in Poughkeepsie, and he and his wife have two boys to keep them active.

Every once in a while you pick up a newspaper and see an article that stops you cold for a minute. It is an article about someone you know very well. Cliff Abrahamson was one of seven men killed on August 19, 1955, in the crash of an Air Force plane at Hawthorne, Nev. He was co-pilot of a twin engine C47 attached to the 61st squadron of the 8th Air Reserve Group at Stead Air Base near Reno. His plane was one of seven planes on a classified training mission when the C47 rammed the top of a 6,000 foot peak in the Gillis Mountain Range. Cliff was a buddy to all who knew him at school. He was one of the mainstays of WMIT Radio Station, and one of my best customers on the midnight shift at Pritchard Lounge. Those of us who knew Cliff well mourn a dear friend.

The airplane was responsible for another tragedy on April 15, 1956. The morning of April 15 was a happy one for John Markush. He had been visiting with his younger brother in Rochester, N.Y., over the weekend, and now he and his fiancée, Marion Elizabeth Mattocks, were preparing to fly back to New York City. John owned his own two-seater plane and had been flying for over three years. However, John and Marion crashed near Warrensburg, about 50 miles north of Albany. The plane was running low on gas, and John tried to land on an ice-covered pond, and discovering that there was not enough room, attempted to get back into the air. The attempt failed and both John and Marion were killed in the crash. Funeral services were held for both John and Marion in the Manhasset Congregational Church, the church in which they were to be married on May 26. See you all in next month's issue. — JOHN T. WEAVER, *Secretary*, 24 Notre Dame Road, Bedford, Mass.

## 1951

Mickey Alper writes that his work at the California Technology Jet Propulsion Laboratory has centered mostly around high temperature structures research, and

that he has a part-time appointment as lecturer in civil engineering at Cal Tech as well. Mickey's wife, Marcia, is finishing her physical therapy studies at Simmons, and will rejoin him after she gets her degree in January. Mickey's own work on his doctorate is complete except for finishing his thesis. Mickey also says that John Kalvinskas and his wife, Louanne, are in Los Angeles, where John has a fellowship at Cal Tech, working toward a doctorate in chemical engineering. They have been there since September of last year, and John worked for DuPont at Gibbstown before that.

A recent card from Lionel Flotte said that he was due to get out of the Navy on November 15, and would be in business with his father in New Orleans after that. Lionel has been stationed in New Orleans throughout his three-year tour of duty. He has a son, now two years old. John McGrew is still with the production department of Union Carbide and Carbon Chemicals Company at Charleston, W. Va., where he has been working since 1953. John has been married for two years to the former Kim Sanford of Charleston, and they have an eight-month old daughter, Sarah Catherine.

Stuart Pratt was transferred by DuPont on June 1 to the new neoprene plant at Montague, Mich. He and his wife and two daughters have bought a new home there and hope to move into it in a few weeks. John DeWitt, after four and one half years as development support engineer on the Bomarc missile project at Boeing in Seattle, is now at Wright-Patterson A.F.B. for two years of active duty. His present work is as project engineer in flight simulators.

Ronald Silver got out of the Air Force in June and is with the University of California Radiation Lab. He extends an invitation to any classmates who are in Pleasanton, Calif., to stop by for a visit at 625 East Angela Street. Milton Neuman has his own civil engineering consulting firm, Neuman Engineers, in El Centro, Calif. They handle surveys, building designs, and sewage and water improvements. Milton married Gay Phillips of Simmons after graduation, and they now have two boys, ages one and three.

Don Gaver received a doctor of philosophy degree in mathematics from Princeton last June. Jacob Hill was awarded a master of science degree by Ohio State in August, and Joe Sangiolo received a master of industrial engineering degree from New York University in July. Ed Lays writes that he recently resigned from the Columbus Division of North American Aviation to accept a senior engineering position with the Denver division of the Glenn L. Martin Company. His new responsibilities involve supervision of all wind tunnel testing in connection with the Titan intercontinental ballistic missile program. The appointment of Bob Haberstroh to be industrial liaison officer at M.I.T. was announced in September. In this post he will participate in the program of cooperation with industries having a special interest in the technical activities of the Institute.

Ed Guenther has joined the Westinghouse atomic power research laboratory near Pittsburgh, to do engineering devel-



opment work on the atomic reactor for the nation's first full-scale atomic power generating station. David Sinizer has recently been appointed group leader in the chemical process development department at Atomics International, a division of North American Aviation, in Canoga Park, Calif. He directs the development of new methods for recovering irradiated uranium fuel and the fabrication of new fuels for sodium graphite type nuclear reactors. Orlo Powell joined the Hamilton Standard Division of United Aircraft Corporation in July. Hamilton Standard also announced that Roger Weatherbee has been advanced to the post of project engineer at the Windsor Locks, Conn., plant. Roger and his wife have three children: Ann, eight, Taylor, five, and Mark, three.

Charlie Schramm is now with Esso Research and Engineering, at Linden, N. J., after graduate study at Brooklyn Polytechnic Institute, two years in the Air Force, and work with the M. W. Kellogg Company in New York City. Charlie is in the chemicals research division at Esso. Paul Gibson has been transferred by Procter and Gamble from Kansas City to Cincinnati, where he is doing design work in the packaging division. Herb Voelcker, now a first lieutenant in the Army Signal Corps, has been cited for outstanding rifle marksmanship. Herb won the free rifle 300 meter competition at Camp Perry, Ohio, and was selected as a member of the U. S. rifle team for the Olympics. Herb is married to the former Jean Hunter of Midland, Mich. He worked for Eastman Kodak at Rochester before entering the Army.

Louis Sylvia was married in September to Mary Trepanier, at New Bedford, Lou is now with DuPont in Newark. Tom Hoffman and Jill Ann Thompson, of Waltham, were married in October. Vern Pfanku has been working on equipment for the new Owens-Corning Fiberglas plant in Barrington, N. J.; he also reports the birth of a girl, Kristin, last January. Lloyd Smiley, who now has four children, has moved to Poughkeepsie, and is director of industrial engineering for the Eastern Division of Western Printing and Lithographing Company. Before this, Lloyd was a management consultant with the firm of Drake, Startzman, Sheahan and Barclay, in New York City.

Frank Binns has been transferred by the Air Force to the Office of Scientific Research and Development, in Washington, and received notice of his promotion to captain, effective in January. Frank expects to leave the Air Force in February, but did not know what his plans would be after that. Ed Finnegan is now in Syracuse as sales engineer for the Master Builders Company of Cleveland. Frederico Baptista is in the United States on a one-year assignment with Standard Oil Company of New Jersey, after which he will return to Caracas. Gil Cook is with Hathaway Instrument Company in Denver, as an engineer. Gil has three daughters: Katie, Harriet, and Henrietta. Have a fine New Year.

—ROBERT S. GOOCH, Assistant Secretary, 4616 Stadium Drive, Fort Worth 15, Texas, RICHARD W. WILLARD, Secretary, Box 105, Littleton, Mass.

## 1954

Weddings seem to be occupying the time and efforts of a large portion of the Class these days, and we are a little behind in reporting them. So, let's try to catch up. Tom Alexander and Mary Fielding were married in Andover, Mass., on June 9. Ed Brown and Patricia Anne Hoilman took time out from their medical school studies to walk down the aisle in Burlington, Vt., on June 8. Mr. and Mrs. Brown are both pushing toward their M.D. degrees at the University of Vermont Medical School. Martin Cohen and Arline Sitner were married in Springfield, Mass., on September 30. Marty is working with the architectural firm of Sidmore, Owings and Merrill, New York. John Farquhar and Norma Clark took the plunge in Peterboro, N. H., on September 22. John is currently in the Air Force, stationed in Hampton, Va. Louis Goldberg, who is also in the Air Force, and Marlene Lucille Bell were married in Brookline, Mass., some time in September—the exact date has not been discovered.

Marblehead, Mass., was the place where John Gusmer wed Carolyn Keene on October 6. John is stationed at the Frankfort Arsenal in Philadelphia. Gene Kovary went all the way to Watford, England, courtesy of Uncle Sam, to marry June English on August 10. Gene is still over there; the Army won't let him come back. Stephen Lowe and Shirley Mae Graves were married in Lynn, Mass., on June 23. Steve, who is an Annapolis graduate, is stationed at Newport, R. I. Lou Mahoney married Marie Therese Murphy in Melrose, Mass., on October 6. Lou is marking time at the Army Chemical Center in Maryland. The wedding of Bob Mason and Marilyn Anne Turner took place in Reading, Mass., on October 6. Bob is working in Arlington, Va., it is believed. Francesca Lenci was the bride of Tom Molnar in New York City on September 23. Tom is currently serving time in the Army. And Bob Muller married Karen Grinnell in Quincy, Mass., on September 15. Bob spends his time these days with International Business Machines in Poughkeepsie.

Several members of that part of the Class which is obsessed with the idea of going to school have reached milestones in their academic careers. Bob Anslow received his master of business administration from Harvard in June. Howard Brody and Bill Steyert received their masters of science in physics from the California Institute of Technology, also in June. Pete Andreellos, at about the same time, was acquiring a master of science from Tufts College. Andre Sampaou was awarded a master of automotive engineering by the Chrysler Institute of Engineering in Detroit.

Dale Roff, who is designing igloos for the Eskimos (he is the architect for the Alaska Native Service), sent an announcement of the birth of his third son, Kent Rockwell, who arrived September 20. The two other young Roffs are Mark, three, and Derek, two years old. Dale and his wife, marooned in Juneau, Alaska, would like to hear from other architecture graduates in the Class. The

address is P.O. Box 756, Juneau, Alaska. The Roffs claim they like it up there; they have bought themselves a house, so apparently they intend to stay.

Dean Jacoby sends word that he heard from Ron McKay that Bill McTigue was married in June. There are no other details available, but I think that is a pretty good third-hand report nevertheless. Along the same line, Bill Beals told Dean, who told me, that Stu Smith was married in June in Houston. We have even got the place in this one. Bill, by the way, is stationed with the Air Force in Oklahoma City. Mr. Jacoby also reports that Larry Holmes and Charlie Burnham are sharing quarters outside Dayton (they are both stationed at Wright-Patterson Air Force Base), and that Dave Vogel is the proud papa of Katherine Elizabeth, born August 11. The Vogels also have a son, Daniel, who is two and a half. Dave is currently with the Army in Europe somewhere.

Among the latest reports on the boys in uniform, we have these items: Dick Finn is at the Aberdeen Proving Ground in Maryland. Joe Kozol is with the Signal Corps somewhere. George Lampke is taking six months training at Fort Knox, Ky., while his wife Diane waits at home in Newton, Mass. Frank Leeds and Obie Stalcup have been commissioned ensigns in the Navy after completing Officers' Candidates School at Newport, R. I. John Melavas, who is stationed at Wright-Patterson Air Force Base, took some time off to participate in the World-Wide Air Force Tennis Tournament. Paul Pollinger flies airplanes for the Navy at Whiting Field Auxiliary Air Station, Milton, Fla.

That brings us to the end of this report. Drop me a line when you get a chance; I could sure use some choice bits of gossip for future columns. —EDWIN G. EIGEL, JR., Secretary, 3654 Flora Place, St. Louis 10, Mo.

## 1955

Greetings and salutations for the New Year! After many months of absence, your roving reporter returned to the Institute and is proud and happy to say that the old school seems to be maintaining its prestige, perhaps even gaining a little more as time goes on. The school and the surrounding area seem to have changed very little. The auditorium is no longer a startling white, but Cambridge grey. The chapel is now complete with "the cross between a lobster claw and a can opener," i.e., the Roszak "steeple," which is perfect as it grabs for the heavens—no one could call the chapel an Esso tank now. The Compton Lab looms up in the rear, but most things are amazingly unchanged. And so many familiar faces! Les Lee, Dan Brown, Bob Hill, Ishan Haddad are back in the Chemical Engineering Department. Mario "UMOC" de Figueiredo is rattling around in Building 16 (it's still not too crowded out there). Charlie Prewitt is back for more geophysics.

Everywhere the Class of 1955 is still quite evident. Harry Schreiber and Peg are living in Arlington, as Harry goes to Tech and/or Boston University, and keeps the Army happy at Devens. Peg has a new and exciting job caring for

their newly-arrived daughter, Meg. That Boston is still a fine town.

The October class at Newport graduated three of our noble ranks; Bob Au, Harry Wells, and Miles Kiley. Allan Foster is at Fort Leonard Wood, Mo., putting in his six months under the Reserve Forces Act. Gregory Robillard received his navigator's wings in October after completion of the Air Force's 42-week course at Harlingen A.F.B. in Texas, and is now receiving further training in radar bombardment and electronics. Hal Stubing turned in his uniform and returned to work for Bethlehem Steel in Buffalo. Dick Bergman reported to work at Esso in Linden, N. J., after honeymooning in Bermuda with Judy, nee Hyman, of New York and Bennington. They had a well-ushered wedding; Bud Jacobs, Marc Gross, Mike Halpern, Hal Cohen, and Shelly Moll was best man. Dick also collected his S.M. in June from Tech.

Rudolph Freese is involved in jet training at Webb A.F.B. in Big Spring, Texas, and Dick Ward was at Fort Dix at last hearing. Dick Maehl, who is still at M.I.T. studying for his doctorate, claimed a bride in October, the former Joan Benson of Mattapan, who is a junior at Simmons. And Pat Norton, who received his S.M. at Tech but is also still there, married Gloria Marie Moulton of Forest Hills about the same time. After two years with the Army, Reyburn Potter returned to civilian life and married Carol Griffin of Oakland, Calif. The Potters are residing in Oakland until February, when they plan to return to the East. Norm Ness and Amelia Mercaldi of Meriden, Conn., and Skidmore, took the vows in August. They are now living in Arlington Heights, while Norm is studying for the Ph.D. in geophysics, and Amelia is school-teaching in Framingham.

Now that our roving reporter isn't looking, I (your perennial M.I.T.er) can bring you up to date on our Miss Lanier. Dell is now a full instructor in the Chemical Engineering Department at Columbia University. Actually, the work involved is entirely administrative and not teaching, so as Dell says, "The reputation of the Department is still intact." However, she is really enjoying the gay whirl of academic life, faculty clubs, and New York City. I know for a fact that Dell would be tickled pink to hear from us if we ever get into New York City, so please give her a call. (The same goes for me when you get into Boston.)

As usual, this year started out with a bang as far as Class news was concerned, and it's about this time that we get down to drips and drabs. Let's hear from you — please. — DELL LANIER, *Secretary*, 54 West 71st Street, New York 23, N. Y. L. DENNIS SHAPIRO, *Assistant Secretary*, Room 10-185, M.I.T., Cambridge 39, Mass.

## 1956

Here beginneth another causerie. Did you know that the increase in the price of some diamonds in the last year completely erases the rise in starting salaries over the same period? According to an article in the election day *Wall Street Journal*, the DeBeers officials say that the United States is consuming so many diamonds that the world production is having trouble keeping up.

I have received several press releases from companies who have helped or hired members of our Class. Warren Briggs is working for Corning Glass. Kevin Forsberg is attending University of California, Los Angeles, on a Lockheed award. Richard Young is attending M.I.T. on an American Viscose grant. James Mozzicato, Irving Silver, and David Shefrin are working for Hamilton Standard. Paul Levine and Phillip Platzman are studying at California Technology on Hughes Aircraft awards. Despite our poor show on graduation day, I am happy to announce that all of our class officers have graduated.

Having now worked for six months, I suppose that many of you are beginning to miss the old life. It is a growing realization that we have not finished studying or learning, and we are kept on the run just keeping abreast of the world. It is nice to know that we have been given a good start by a marvelous institution. It is amazing how much they crammed in the noggin in only four years. The "whole man" idea becomes less of a laughing matter as we are called on to open our store of knowledge on other than technical subjects. I know that my life in the dormitory was an excellent lesson in community living, and I am sure that you fraternity men have reached similar conclusions.

To bring up a touchy subject. How is your draft board treating you? Mine panicked over Suez and tried, even though the Air Force has priority. You men already in the service are quiet. How is life at a place like Lackland or Fort Belvoir? In producing "War and Peace," Hollywood seems to have emerged from its hackneyed humdrum to produce a saga approaching "Gone with the Wind."

Our new and versatile auditorium was the scene of two political speeches this fall and, oddly enough, by politicians who have something in common, besides their names; Harry Truman and Harold Stassen. These lectures were jointly sponsored by Harvard and our Lecture Series Committee and are just one of the many engrossing activities always available for a Techman's spare moments. May the New Year be better than the last. — BRUCE B. BREDEHOFT, *Secretary*, 1528 Dial Court, Springfield, Ill. M. PHILLIP BRYDEN, *Assistant Secretary*, Box 37, West Topsham, Vt.

## 1956G

The former president of the Graduate Students' Council and chairman of last fall's Endicott House Conference on graduate student affairs, Chris Newton has been with Minnesota Mining Company. In a brief note, he tells of plans to return for a long visit to his native South Africa. We wish him a good voyage and a safe return. Through Chris, we learned of the engagement of Cut Umbach, Williams'54, a fellow industrial management graduate, to Nancy Eberle, an alumna of Wellesley College. Cut has been getting industrial experience with Superior Concrete Accessories in Chicago.

We would like to report on the whereabouts of two enterprising graduates who are doing interesting work. Victor Pelaez is a young gentleman from Argentina who spent two years studying geologic materials. Union Carbide and Carbon now has this cosmopolitan and is sending him to different parts of the world as their technical agent on geologic matters. Peter Rigopolous, from Waterbury, Conn., has been conducting research on ion exchange problems, and reports his work has been challenging and varied. Pete is perfecting the ion exchange electrolytic membranes of Ionics, Inc., a firm located on Sixth Street behind M.I.T. The bridge between academic and industrial research was short for Pete, who is continuing the studies comprising his S.M. thesis in chemical engineering.

A former biologist from Boston University, and an Army veteran, John O'Neil has recently gone with Beech-Nut Foods in New York. Two more graduates of the Naval Academy have reported for their assignment with the Navy after graduate study here. A master of science degree was awarded to Lieutenant Carl J. Ostertag, U. S. Navy, in June in the field of aeronautical engineering. After graduation, Lieutenant Ostertag joined a naval aviation squadron, flying A3D aircraft. Another aeronautical engineering graduate, Lieutenant Charles W. Meyrick, U. S. Navy, has been assigned to an air development squadron in Key West, Fla. A Navy man from Course VIII, Lieutenant Ollie J. Loper, has been sent with his family to the Heavy Attack Training Unit, Naval Air Station, Sanford, Fla.

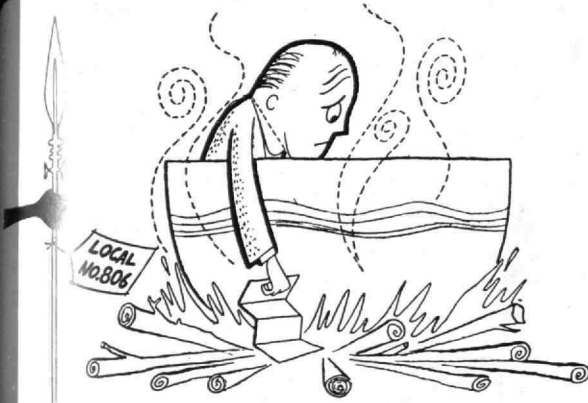
Two weddings of former graduate students in the M.I.T. chapel can be reported. One was that of Inoko Kim, Course X, on June 23, 1956. The second was that of Gene Gordon to Barbara Young on August 19, 1956. For Alumni in the New York area, especially career-minded graduates, a rendezvous spot for social gatherings, as well as for business lunches and industrial conferences, is the M.I.T. Club of New York in the Hotel Chatham. — CHARLES T. FREEDMAN, *Secretary*, 134 Cleveland, Long Beach, N. Y.



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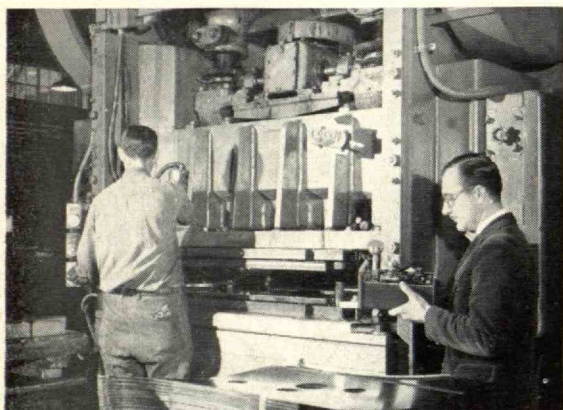
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